9-2320-246-34

TM 9-2320-246-34

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL
SUPPORT MAINTENANCE MANUAL
FOR

TRUCK, PLATFORM UTILITY:
1/2 TON, 4 X 4,
M274A2 (2320-074-1167), M274A3
(2320-782-5792),
M274A4 (2320-782-5793), AND M274A5
(2320-930-1976)

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1967

READEX FICHE best copy available

D 101. 11:

WARNING

CARBON MONOXIDE POISONING CAN BE DEADLY

DO NOT operate vehicle engine in an enclosed area unless the area is **ADEQUATELY VENTILATED.**

THE BEST DEFENSE AGAINST CARBON MONOXIDE POISONING IS ADEQUATE VENTILATION.

TECHNICAL MANUAL
TM 9–2320–246–34

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *5 December 1967*

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL FOR TRUCK, PLATFORM UTILITY: 1/2 TON, 4 x 4 M274A2 (2320–074–1167), M274A3 (2320–782–5792), M274A4 (2320–782–5793), AND M274A5 (2320–930–1976)

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This technical manual contains instructions for direct and general support maintenance of the steering system, front axle and gear carrier assembly, rear axle and transmission assembly, platform, chassis, all peculiar-type items for the 1/2-ton, 4 x 4, Platform Utility Truck, M274A2, M274A3, M274A4 and M274A5 (figs 1-1 and 1-2). It contains descriptions of and procedures for removal, disassembly, inspection, repair, and reassembly of the aforementioned components for the M274 series of vehicles.

b. Appendix A contains a list of current references including supply manuals, forms, technical manuals, and other available publications applicable to the material.

c. Appendix B contains dimensional drawings to facilitate manufacture of part illustrated, applicable in repair of the M274 series vehicles.

d. The direct reporting of errors, omissions, and recommendations for improving this equipment manual by the individual user is authorized and encouraged. DA Form 2028 will be used for reporting these recommendations. DA Form 2028 will be completed and forwarded by the individual user direct to: Commanding General, U.S. Army Tank-Automotive Command, Warren, Michigan 48090, ATTN: AMSTA-TP. One information copy will be provided to the individual user's immediate supervisor (e.g., officer, non-commissioned officer, supervisor, etc.).

e. LO 9-2320-246-12 contains lubricating instructions for the materiel.

f. TM 9-2320-246-10 contains instructions for operating the materiel as well as all maintenance operations allocated to the operator in performing maintenance work within his scope.

g. TM 9-2320-246-20 contains instructions for maintenance of the materiel within the scope of organizational maintenance.

h. TM 5-2805-213-14 contains instructions for the maintenance of engines used with the materiel.

1-2. Direct and General Support Maintenance Allocation

Refer to maintenance allocation chart in TM 9-2320-246-20.

1-3. Forms, Records and Reports

a. General. Responsibility for the proper execution of forms, records and reports rests upon the officers of all units maintaining this equipment. However, the value of accurate records must be fully appreciated by all persons responsible for their compilation, maintenance, and use. Records, reports, and authorized forms are normally utilized to indicate the type, quantity, and condition of material to be inspected, to be repaired, or to be used in repair. Properly executed forms convey authorization and serve as records for repair or replacement of materiel in the hands of troops and for delivery of materiel requiring further repair to direct and general support maintenance. The forms, records, and reports establish the work required, the progress of the work within shops, and the status of the materiel upon completion of its repair.

b. Authorized Forms. The forms generally applicable to units maintaining this equipment are listed in Appendix A. No forms other than

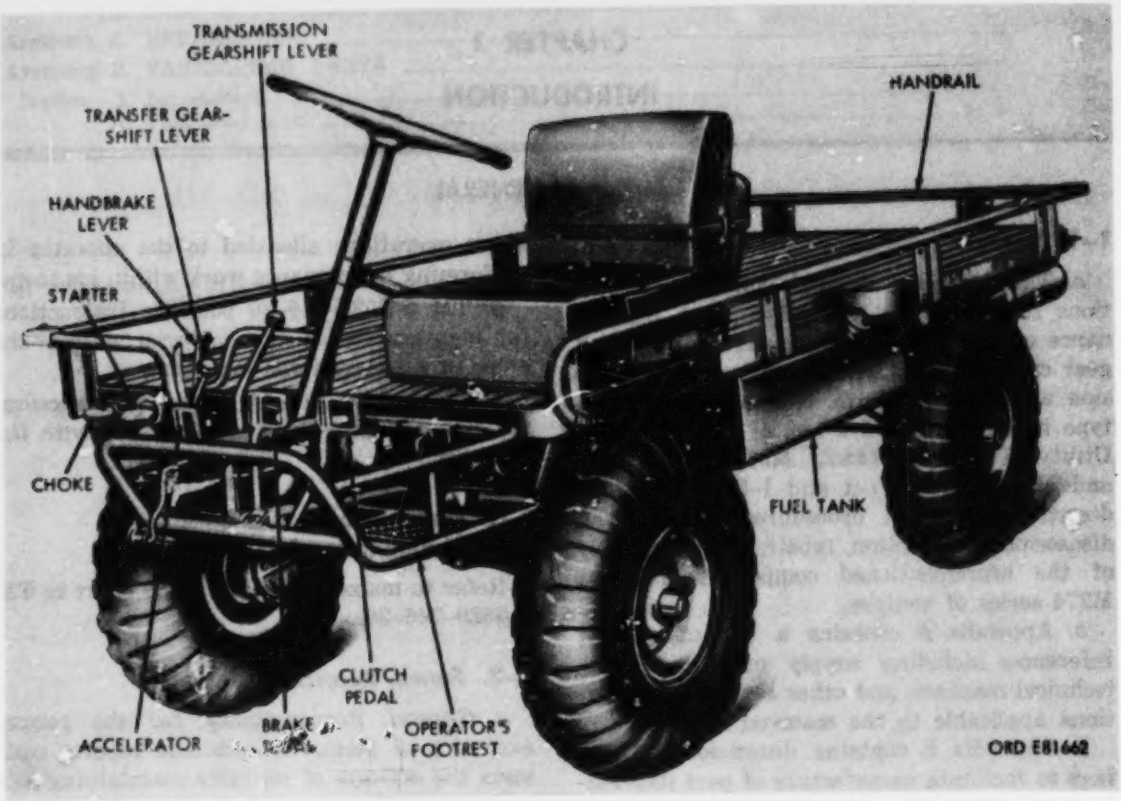

TRANSMISSION GEARSHIFT LEVER
HANDRAIL
TRANSFER GEAR-SHIFT LEVER
HANDBRAKE LEVER
STARTER
CHOKE
FUEL TANK
CLUTCH PEDAL
BRAKE PEDAL
OPERATOR'S FOOTREST
ACCELERATOR
ORD E81662

Figure 1-1. Left front view of M274 series vehicle.

those approved for the Department of the Army will be used. For current and complete listing of all forms, refer to current DA Pamphlet 310-2. Additional forms applicable to the using personnel are listed in the operation technical manual. For instructions on use of these forms, refer to TM 38-750.

c. Field Report of Accidents.

(1) *Injury to personnel or damage to materiel.* The reports necessary to comply with the requirements of the Army safety program are prescribed in detail in AR 385-40. These reports are required whenever accidents involving injury to personnel or damage to materiel occur.

(2) *Ammunition.* Whenever an accident or malfunction involving the use of ammunition occurs, firing of any of the lot which malfunctions will be immediately discontinued. In addition to any applicable reports required in (1) above, details of the accident or malfunction will be reported as prescribed in AR 700-1300-8.

d. Report of Unsatisfactory Equipment and Materials. Any suggestions pertinent to the improvement, safety, or correction of unsatisfactory performance of equipment and materials are to be reported on DA Form 2407 in

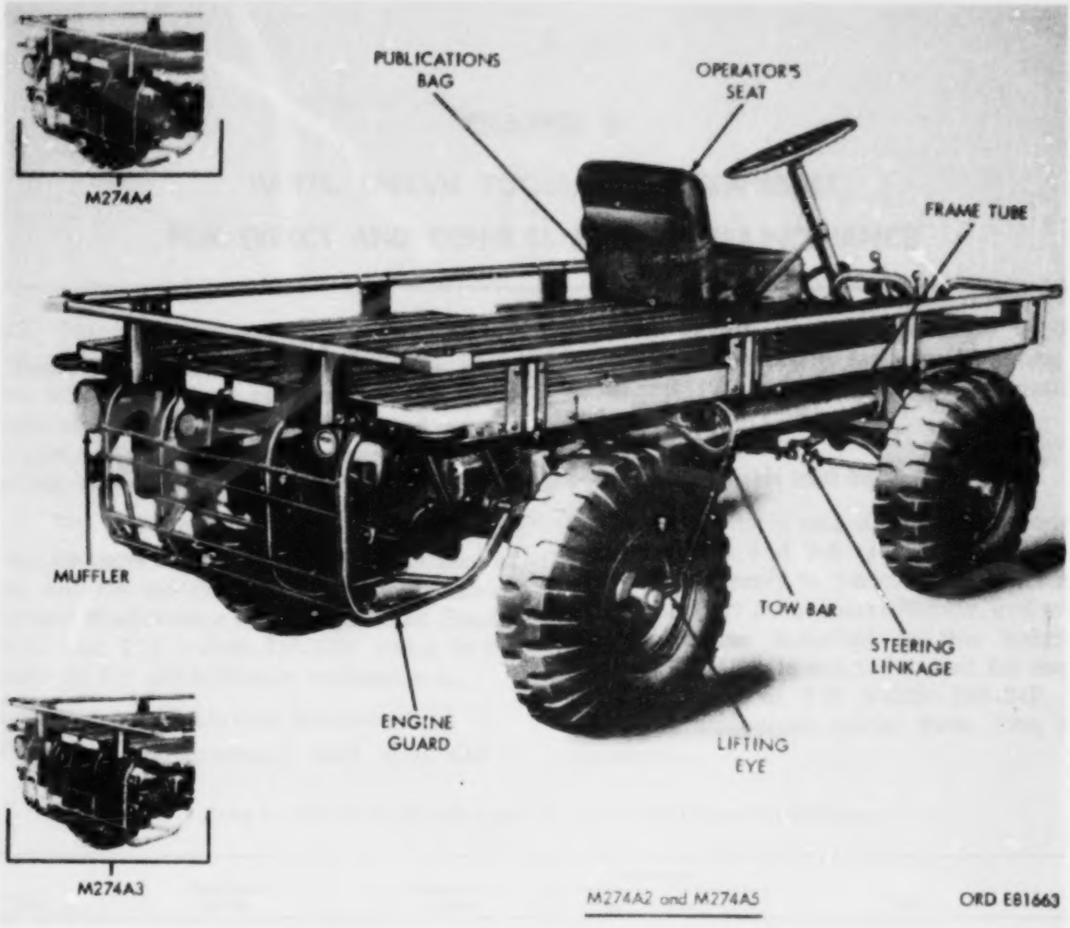

PUBLICATIONS BAG
OPERATOR'S SEAT
FRAME TUBE
M274A4
MUFFLER
TOW BAR
STEERING LINKAGE
ENGINE GUARD
LIFTING EYE
M274A3
M274A2 and M274A5
ORD E81663

Figure 1-2. Right rear view of M274A2 and M274A5 model, with engine guard insets for M274A3 and M274A4 models.

accordance with instructions contained in TM 38-750.

Note. Do not report all failures that occur. Report only REPEATED or RECURRENT failures or malfunctions which indicate unsatisfactory design or material. However, reports will always be made in the event that exceptionally costly equipment is involved.

Section II. DESCRIPTION AND DATA

1-4. Description

Description and data of assemblies and components covered in this manual are located in the pertinent chapter.

CHAPTER 2

PARTS, SPECIAL TOOLS, AND EQUIPMENT FOR DIRECT AND GENERAL SUPPORT MAINTENANCE

2-1. General

Tools, equipment, and maintenance parts over and above those available to the using organization are supplied to direct and general support maintenance units for maintaining, repairing and/or overhauling the materiel.

2-2. Repair Parts

Repair parts required for the maintenance of this materiel are listed in Direct and General Support Maintenance Repair Parts and Special Tools List TM 9-2320-246-34P which is the authority for requisitioning replacements.

2-3. Common Tools and Equipment

Standard and commonly used tools and equipment having general application to this materiel are authorized for issue by tables of allowances (TA) and tables of organization and equipment (TOE).

2-4. Special Tools and Equipment

The special tools and equipment illustrated in figures 2-1 and 2-2 are listed in table 1. They are necessary to perform the direct and general support maintenance, repair, and overhaul operations described in this technical manual. This list is not to be used for requisitioning. Refer to TM 9-2320-246-34P for listing of authorized special tools, kits, and equipment.

Table 1. Special Tools Authorized for Direct and General Maintenance

Item	Functional group	Federal stock number	Reference		Use
			Fig.	Par.	
Fixture	1000	4910-713-1013 (7045666)	6-31 2-2	6-21b	Required for backlash setting of axle ring and pinion gear assembly.
Fixture	1400	4910-671-6614 (7059970)	2-2		Required for steering alinement.
Fixture (scale)	1000 1100	4910-713-1015 (7045667)	2-2 6-30	 6-19e	Required for depth-setting of axle pinion gear assembly.
Handle	0700 1000 1100	5120-601-2234 (7010321)	2-1 5-22	 5-13e	Used with replacer 5120-601-2225.
Puller	0700	5120-601-2227 (7010309)	2-1 6-4		Used for removal of transmission shift shaft oil seals.
Consists of:					
Body		7010811	2-1		
Nut		176050	5-3	6-4b	
Screw		7010810	and 6-4		

Table 1. Special Tools Authorized for Direct and General Maintenance—Continued

Item	Functional group	Federal stock number	Reference Fig.	Reference Par.	Use
Replacer	0700	5120-601-2229 (7010314)	2-1 6-5	6-5a 6-17a 6-18a	Replacing transmission shift shaft oil seals.
Replacer	0700 1000 1100	5120-601-2225 (7010305)	2-1 5-22	5-13e	Replacing transmission input shaft oil seal and front and rear axle shaft outer oil seal.
Replacer	0700 1100	5120-601-2223	2-1	5-5e	Required for replacing front and rear steering bellcrank needle bearings.
Scale	1000	6670-347-5922	2-2 6-29	6-19d	Checking preload on drive pinion bearings.
Tool kit		5180-601-2235 (7059875)			Organizational maintenance, Special Kit A.
Tool kit		5180-601-2236 (7059897)			Organizational maintenance, Special Kit B.
Wrench	0700	5120-601-2224 (7010302)	2-1 6-11	6-10a	Secures transmission output shaft front bearing locknut.

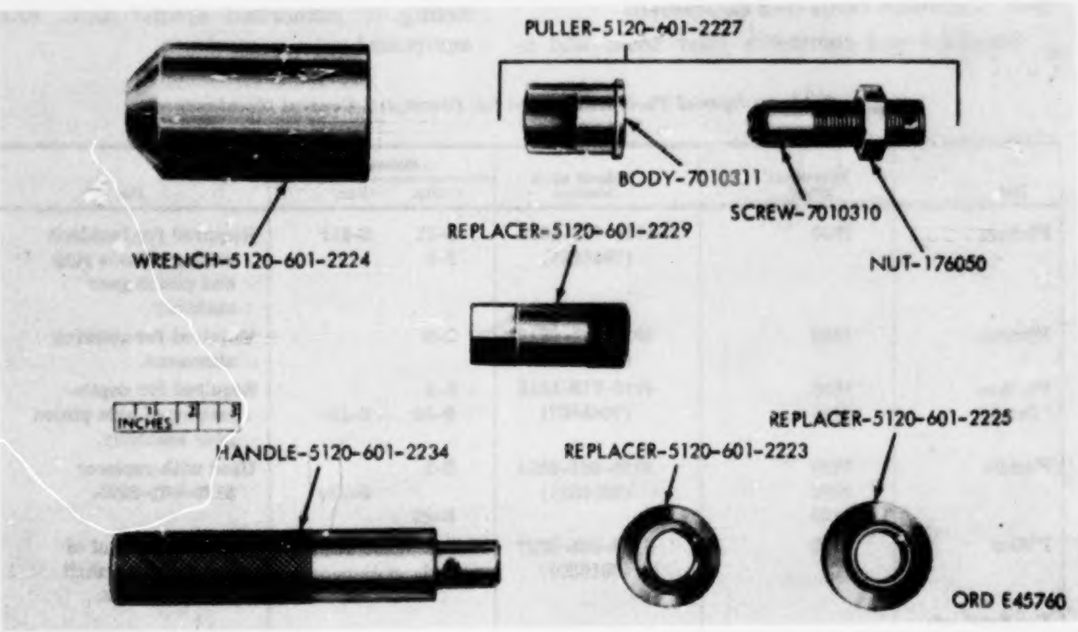

PULLER-5120-601-2227
BODY-7010311
SCREW-7010310
NUT-176050
WRENCH-5120-601-2224
REPLACER-5120-601-2229
INCHES 1 2 3
HANDLE-5120-601-2234
REPLACER-5120-601-2223
REPLACER-5120-601-2225
ORD E45760

Figure 2-1. Special tools for front and rear axle assemblies.

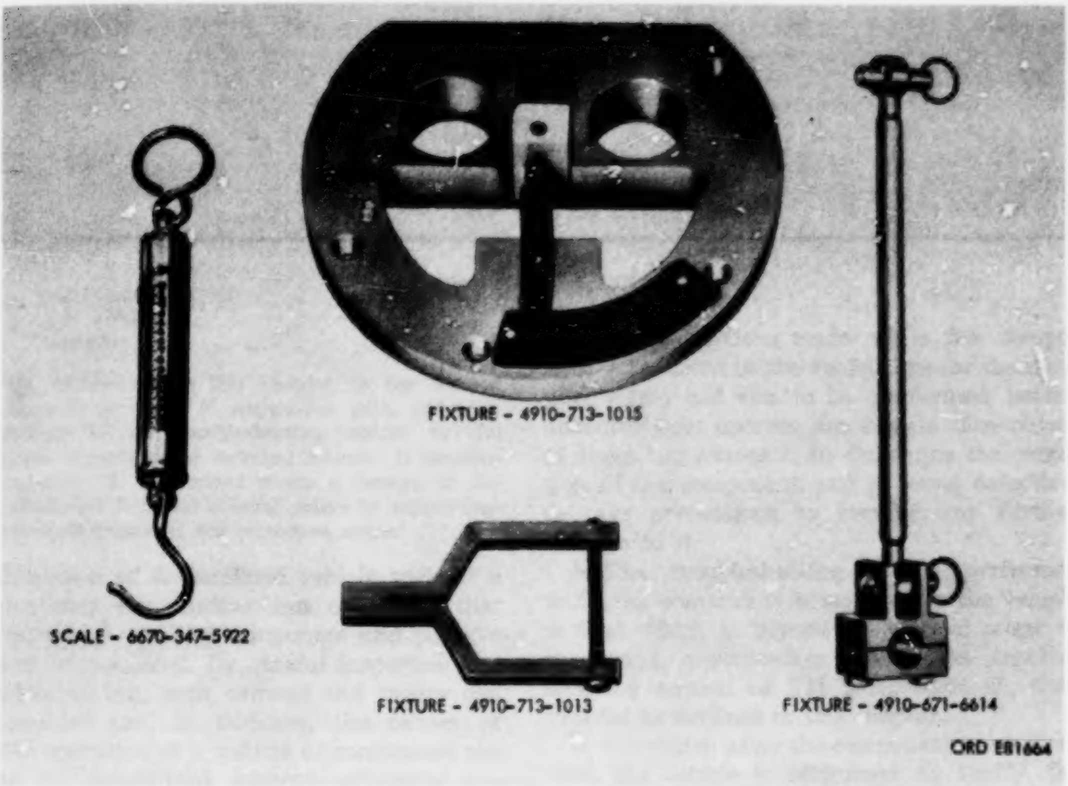

FIXTURE - 4910-713-1015
SCALE - 6670-347-5922
FIXTURE - 4910-713-1013
FIXTURE - 4910-671-6614
ORD E81664

Figure 2-2. Special tools for front and rear axle assemblies.

CHAPTER 3

TROUBLESHOOTING

Section I. GENERAL

3-1. Purpose

Note. Information in this chapter is for use of maintenance personnel in conjunction with, and as a supplement to the troubleshooting section in the pertinent organizational technical manual. It provides continuation of instructions where a remedy in the organizational technical manual refers to supporting-maintenance personnel for corrective action.

Operation of a deadlined vehicle without a preliminary examination can cause further damage to a disabled component and possible injury to personnel. By careful inspection and troubleshooting, such damage and injury can be avoided and, in addition, the causes of faulty operation of a vehicle or component can often be determined without extensive disassembly.

3-2. General Instructions and Procedures

This chapter contains inspection and troubleshooting procedures to be performed while a disabled component is still mounted in the vehicle and after it has been removed.

a. The inspections made while the component is mounted in the vehicle are for the most part visual and are to be performed before attempting to operate the vehicle. The object of these inspections is to determine the condition of the component, and if found defective, to take precautions to prevent any further damage to it.

b. The troubleshooting to be performed while the component is mounted in the vehicle is that which is beyond the normal scope of the using organization. Check the troubleshooting section of TM 9-2320-246-20, then proceed as outlined in this chapter.

c. Inspection after the component is removed from the vehicle is performed to verify the diagnosis made when the component was in the vehicle, to uncover further defects, or to determine malfunctions if the component alone is received by the supporting maintenance. This inspection is particularly important in the last case because it is often the only means of determining the trouble without replacing the component.

Section II. TROUBLESHOOTING PROCEDURES

3-3. General Procedure

a. This section contains troubleshooting information and tests for locating and correcting trouble which may develop in the vehicle. Each symptom of trouble or malfunction given for an individual unit is followed by a list of probable causes of the malfunction and corrective actions necessary to remedy the malfunction.

b. This technical manual cannot cover all possible malfunctions and deficiencies that may occur under the many conditions of operation. If a specific malfunction, test, or remedy is not covered, proceed to isolate the system in which the trouble occurs and then locate the defective component. Do not neglect use of any test instruments. Standard automotive theories and principles of operation apply in troubleshooting the vehicle. Question the operator of the vehicle to obtain maximum number of observed symptoms.

Table 2. Troubleshooting

Malfunction (symptom)	Probable cause	Corrective action (remedy)
	ENGINE	
1. Not operating properly.		a. For removal and replacement refer to TM 9-2320-246-20. b. See Note for removal, replacement, or repair of component parts.
	CLUTCH	
2. Clutch slips.	a. Improper pedal adjustment.	a. Refer to TM 9-2320-246-20.
	b. Clutch controls binding.	b. Refer to TM 9-2320-246-20.
	c. Driven disk facing burned or worn.	c. (See Note).
	d. Weak springs.	d. (See Note.)
3. Clutch grabs.	a. Clutch controls binding.	a. Refer to TM 9-2320-246-20.
	b. Driven disk facing burned or worn.	b. (See Note.)
	c. Broken or bent parts on pressure plate.	c. (See Note.)
	d. Friction surfaces rough or scored.	d. (See Note.)
4. Clutch rattles.	a. Clutch bearing carrier return spring unhooked or broken.	a. Refer to TM 9-2320-246-20.
	b. Driven plate drive spring broken.	b. (See Note.)
	FUEL SYSTEM	
5. No fuel at carburetor.	a. Fuel tank empty.	a. Refer to TM 9-2320-246-20.
	b. Defective fuel pump.	b. (See Note.)
6. Fuel in carburetor but not in cylinders.	Carburetor jets or passages clogged.	(See Note.)
7. Leak in fuel system.	Loose connection, defective lines.	Refer to TM 9-2320-246-20.
	EXHAUST SYSTEM	
8. Excessive exhaust noise.	a. Loose exhaust pipe connections.	a. Refer to TM 9-2320-246-20.
	b. Defective muffler.	b. Refer to TM 9-2320-246-20.
	c. Defective exhaust pipe gaskets.	c. Refer to TM 9-2320-246-20.
	COOLING SYSTEM	
9. Engine runs too hot.	a. Fan belt loose or broken.	a. (See Note.)
	b. Fan damaged or not operating properly.	b. (See Note.)
	c. Fan guard louvers closed.	c. (See Note.)
	d. Engine shroud dirty or damaged.	d. (See Note.)
	ELECTRICAL SYSTEM	
10. Ignition faulty while engine is running.	a. Faulty spark plugs.	a. (See Note.)
	b. Faulty conduit or bed assemblies.	b. Refer to TM 9-2320-246-20.
	c. Faulty switch.	c. Refer to TM 9-2320-246-20.
	d. Magneto incorrectly timed.	d. (See Note.)
	e. Magneto faulty.	e. (See Note.)

Note: Refer to TM 5-2805-213-14 for corrective-action instructions.

Table 2. Troubleshooting—Continued

Malfunction (symptom)	Probable cause	Corrective action (remedy)
	ELECTRICAL SYSTEM—Continued	
11. Electrical hour meter not operating properly.	a. Faulty harness.	a. Refer to TM 9-2320-246-20.
	b. Internal damage.	b. Refer to TM 9-2320-246-20.
	PROPELLER SHAFT	
12. Excessive noise or vibration.	a. Foreign material on shaft.	a. Refer to TM 9-2320-246-20.
	b. Lack of proper lubricant.	b. Refer to LO 9-2320-246-12.
	c. Bearings worn.	c. Refer to TM 9-2320-246-20.
	d. Shaft bent.	d. Refer to TM 9-2320-246-20.
	FRONT AXLE	
13. Excessive noise at end of axle.	a. Lack of proper lubricant for drop gears.	a. Refer to LO 9-2320-246-12.
	b. Worn or broken parts in gears, bearings, or universal joints.	b. Disassemble and replace parts as required.
14. Excessive noise in gear carrier assembly.	a. Lack of lubricant.	a. Refer to LO 9-2320-246-12.
	b. Adjustment of gear set incorrect.	b. Disassemble and adjust gears.
	c. Drive gears or bearings worn or broken.	c. Disassemble and replace parts as required.
	REAR AXLE	
15. Excessive noise from axle housing.	Lack of proper lubricant.	Refer to LO 9-2320-246-12
	TRANSMISSION	
16. Excessive noise from transmission housing.	a. Lack of proper lubricant.	a. Refer to LO 9-2320-246-12.
	b. Worn or broken gears or bearings.	b. Disassemble and replace parts as required (par. 6-11).
17. Intermittent howl in transmission.	Gear out-of-round or eccentric with centerline of shaft.	Disassemble and replace parts as required (par. 6-11).
18. Intermittent knocking or thudding.	Burs on gear teeth, or faulty bearing. Generally caused by damaged teeth engaging those of mating gear.	Disassemble and replace parts as required (par. 6-11). Faulty gear can generally be identified by highly polished area on mating gear.
19. High-pitched howl or whine.	Improperly machined or adjusted gears.	Disassemble and replace parts or adjust parts as required (par. 6-11).
20. Slips out of gear.	a. Gear teeth worn or broken.	a. Disassemble and replace parts as required (par. 6-11).
	b. Shift forks loose on shaft, or bent.	b. Disassemble and replace parts as required (par. 6-11).
	c. Notches on shift shaft for ball bearing worn, or compressing spring broken.	c. Disassemble and replace parts as required (par. 6-11).
21. Shifts into first and reverse but not into second or third.	a. Synchronizer parts worn or broken.	a. Disassemble and replace parts as required (par. 6-11).
	b. Gears worn or broken.	b. Disassemble and replace parts as required (par. 6-11)
	c. Shift fork bent or broken, or loose on shift shaft.	c. Disassemble and replace parts as required (par. 6-11).

Table 2. Troubleshooting—Continued

Malfunction (symptom)	Probable cause	Corrective action (remedy)
	TRANSMISSION—Continued	
22. Trouble shifting into desired range.	Gears worn or broken.	Disassemble and replace parts as required (par. 6-11).
23. Shifts hard.	a. Shift shaft bent.	a. Disassemble and replace parts as required (par. 6-11).
	b. Incorrect adjustment of shift control rod.	b. Adjust control rod (par. 6-11).
24. Lubricant leaks into clutch housing.	Plain encased seal in bearing container worn.	Disassemble and replace worn parts (par. 6-11).
	BRAKES	
25. Brake will not hold.	a. Lining worn.	a. Refer to TM 9-2320-246-20.
	b. Brake operating parts broken.	b. Refer to TM 9-2320-246-20.
	c. Brakedrum cracked or worn.	c. Replace brakedrum.
	d. Improper brake cable adjustment.	d. Refer to TM 9-2320-246-20.
	STEERING SYSTEM	
26. Hard or loose steering.	a. Improper cam thrust bearing adjustment.	a. Adjust bearing (par. 4-14).
	b. Improper lever shaft stud adjustment.	b. Adjust lever shaft stud (par. 4-14).
27. Wandering.	a. Worn lever shaft.	a. Replace steering gear assembly (par. 4-10*e*).
	b. Worn lever shaft bearings.	b. Replace steering gear assembly (par. 4-10).
28. Rough steering.	a. Chipped or pitted lever shaft stud.	a. Replace steering gear assembly (par. 4-10*e*).
	b. Chipped or pitted steering cam.	b. Replace steering gear assembly (par. 4-10*e*).
	FRAME AND BODY	
29. Rattles or squeaks.	Loose nuts, bolts, or screws.	Tighten all nuts, bolts, and screws.
30. Access opening cover lock will not stay locked.	a. Insufficient washers on lock rod.	a. Install more washers.
	b. Lock catch worn or bent.	b. Replace lock catch.

CHAPTER 4

REPAIR OF STEERING SYSTEM

Section I. DESCRIPTION AND DATA

4-1. Description

a. General. Refer to TM 9-2320-246-20 for detailed description of the complete steering system.

b. Steering Gear Assembly (fig 4-1). The steering gear assembly is a manually operated cam and lever-type unit. A tapered stud fixed in the upper end of the lever shaft engages in a cam groove, cut in the cam of the steering camshaft. The cam is machine-welded to the camshaft with the outer ends acting as inner races for the cam thrust bearing balls. The complete unit is mounted in a housing with the splined end of the lever shaft extending through the housing to accommodate the steering arm assembly. The steering camshaft extends through the upper cover and is splined to accommodate the steering wheel shaft coupling. A setscrew in the side cover provides adjustment of the lever shaft stud in the cam while shims, between the upper cover and the housing, provide adjustment for the cam thrust bearing.

c. Differences Among Models.

(1) The upper cover of the steering gear assembly used on all models except M274A3 has a thicker wall section and is undercut to provide a locking feature for the steering column.

(2) Lubrication fittings have been removed from the steering tie rod assemblies on all models except the M274A3, since these have prelubricating-type bearings.

(3) The upper and lower bellcrank steering arms on all models except the M274A3 are splined for more positive steering control.

(4) A split-type trunnion support assembly is used on all models except the M274A3 which has the solid-type nonadjustable support.

(5) The M274A5 is the first model to use an aluminum platform and wheels, replacing magnesium previously used on all models.

4-2. Data

Make	Ross
Model:	
M274A3 only	S13221
M274A2, M274A4 and M274A5	S13320
Angular travel of lever shaft	76 degrees
Number of cam thrust bearing balls	10 each end
Ratio	14:1

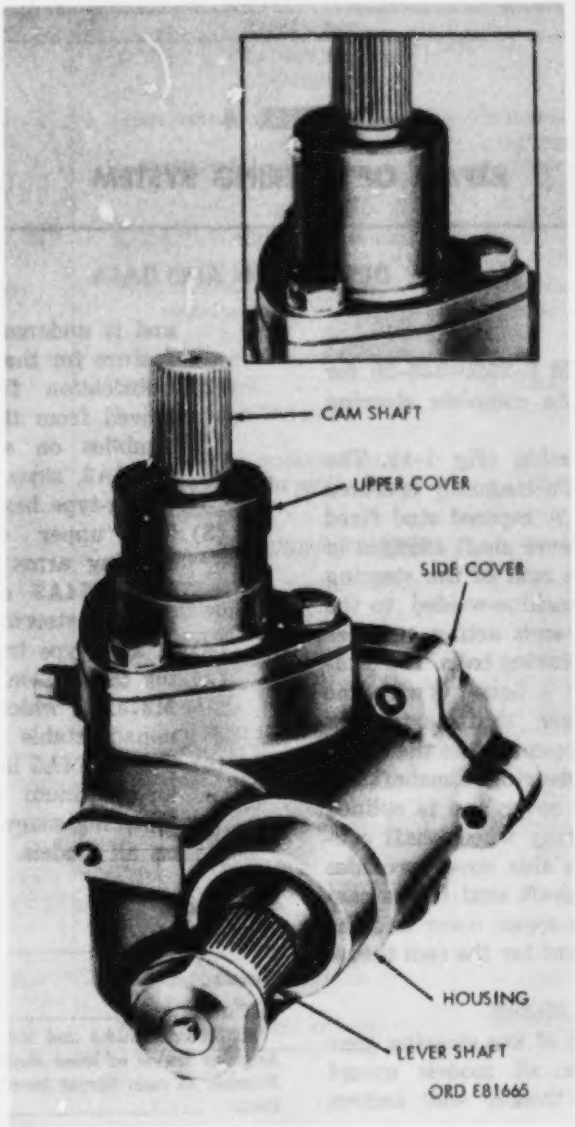

CAM SHAFT
UPPER COVER
SIDE COVER
HOUSING
LEVER SHAFT
ORD E81665

Figure 4-1. Steering gear assembly.

Section II. REMOVAL AND DISASSEMBLY

4-3. Removal

Refer to TM 9-2320-246-20 for removal of the steering system components.

4-4. Disassembly of Tow Bar Bellcrank

Note. Do not remove bellcrank sleeve bearing unless inspection (par. 4-9) indicates the need for replacement. Remove bellcrank sleeve bearing as shown in figure 4-2.

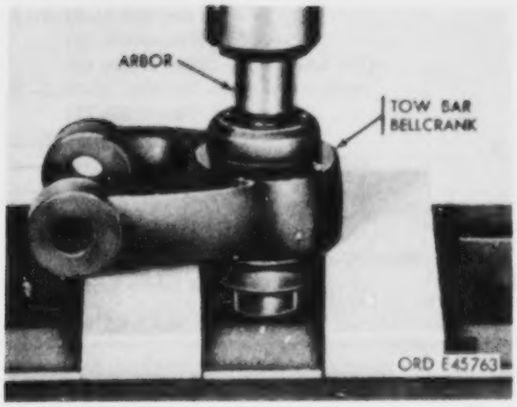


Figure 4-2. Removing or installing bellcrank sleeve bearing.

4-5. Disassembly of Steering Wheel, Column Assembly, and Tube Brace

Refer to figure 4-3 for the key index numbers given in the following disassembly sequence.

a. Remove retaining sleeve nut (1) from the steering column, freeing the steering wheel (2) from serrations on upper end of steering wheel shaft assembly (5).

b. Remove helical compression spring (3) and steering column retaining spring (4).

c. Remove steering wheel shaft assembly (5).

d. Remove two plain hexagon nuts (6) and two external-tooth lockwashers (7), freeing saddle clamp (8) from the steering column (17).

e. Remove steering column bearing assembly (9) and thrust washer (10) from the steering column (17).

f. Remove spring pin (11) and steering wheel shaft coupling (12) from the steering wheel shaft (13).

g. Remove cotter pin (14), flat washer (15), and headed straight pin (16) from steering column (17), freeing steering support shaft tube brace.

h. Remove brace knob (18) and inner brace steering tube shaft (19) from the steering column outer brace (20).

i. Remove cotter pin (21), headed straight pin (22), and clevis (23) from inner brace steering tube shaft (19).

4-6. Disassembly of Steering Arm and Trunnion Support Assemblies

Note. Do not remove bushing (8, fig. 4-4) unless inspection (par. 4-9) indicates need for replacement.

To remove the steering arm assembly from the steering gear, proceed as follows using key numbers from figure 4-4.

a. Remove plain hexagon nut (1), lockwasher (2), and flat washer (3), freeing the steering arm assembly (4).

b. Punch the spring pin (5) out of shoulder-headed pin (6) and remove shoulder-headed pin and helical compression spring (7) from steering arm (9).

c. Press steering arm sleeve bearing (8) out of the steering arm as shown in figure 4-5, using an arbor press and suitable 1-5/8-inch arbor.

d. Remove locking plate (10), trunnion support assemblies (11), and spring pin (12) from the steering gear assembly (18).

e. Remove cotter pin (13) and slotted hexagon nut (14), and special hexagon-head bolt (15) from trunnion support assembly (11), and remove sleeve bearing (16) from the trunnion support (17) on all models except M274A3.

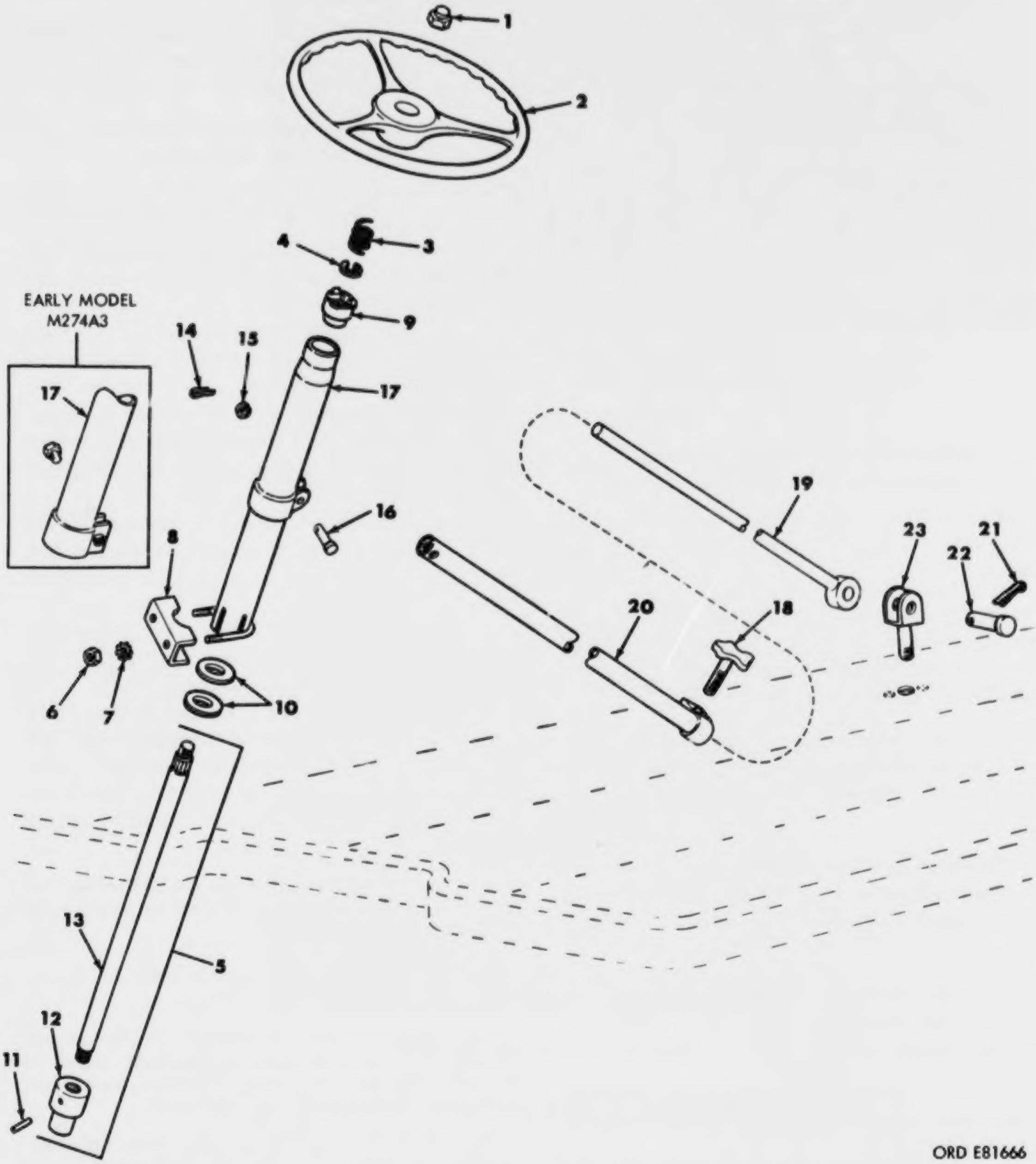
Note. On M274A3 models press sleeve bearing (16) out of trunnion (17), using a suitable arbor press and adapter.

4-7. Disassembly of Steering Gear Assembly

Note. There is only minor repair allowed on the steering gear. If lever shaft or camshaft cannot be adjusted sufficiently for normal operation, discard and replace the entire steering gear assembly.

For allowable repair of the steering gear proceed as follows, using the key index numbers from figure 4-6 unless otherwise specified.

a. Remove plain hexagon nut (1) and setscrew (2) from the steering gear (10).


1
2
3
4
9
EARLY MODEL
M274A3
14
15
17
17
16
8
19
23
21
22
20
18
6
7
10
13
5
12
11
ORD E81666

1—Sleeve nut—7760061
2—Steering wheel—7375336
3—Helical compression spring—7696370
4—Retaining spring—7696348

Figure 4-3. Disassembly or assembly of steering wheel, column assembly, and tube brace.

5—Steering wheel shaft assembly—7966752
6—5/16–18 hex nut
    (2) 96906–35690–502
    (2) 96906–51967–4 (A274A5 only)
7—5/16–in. external-tooth lockwasher
    (2) 96906–35335–34
8—Saddle clamp—11591973
9—Steering column bearing—8677346
10—Thrust washer—7966752
11—Spring pin 3/16–in. dia x 5/8–in. lg—96906–9048–164
12—Steering wheel shaft coupling—8716939
13—Steering wheel shaft—8716938
14—3/32–in. dia x 5/8–in. lg cotter pin—96906–24665–285
15—13/32–in. flat washer—96906–27183–14
16—Headed straight pin—96906–20392–5C45
17—Steering column—11591971
18—Steering column brace knob—7760065
19—Steering tube shaft—7966822
20—Steering column outer brace—7966818
21—3/32–in. dia x 5/8–in. lg cotter pin—96906–24665–285
22—Headed straight pin—96906–20392–5085
23—Clevis—7760075

Figure 4–3.—Continued.

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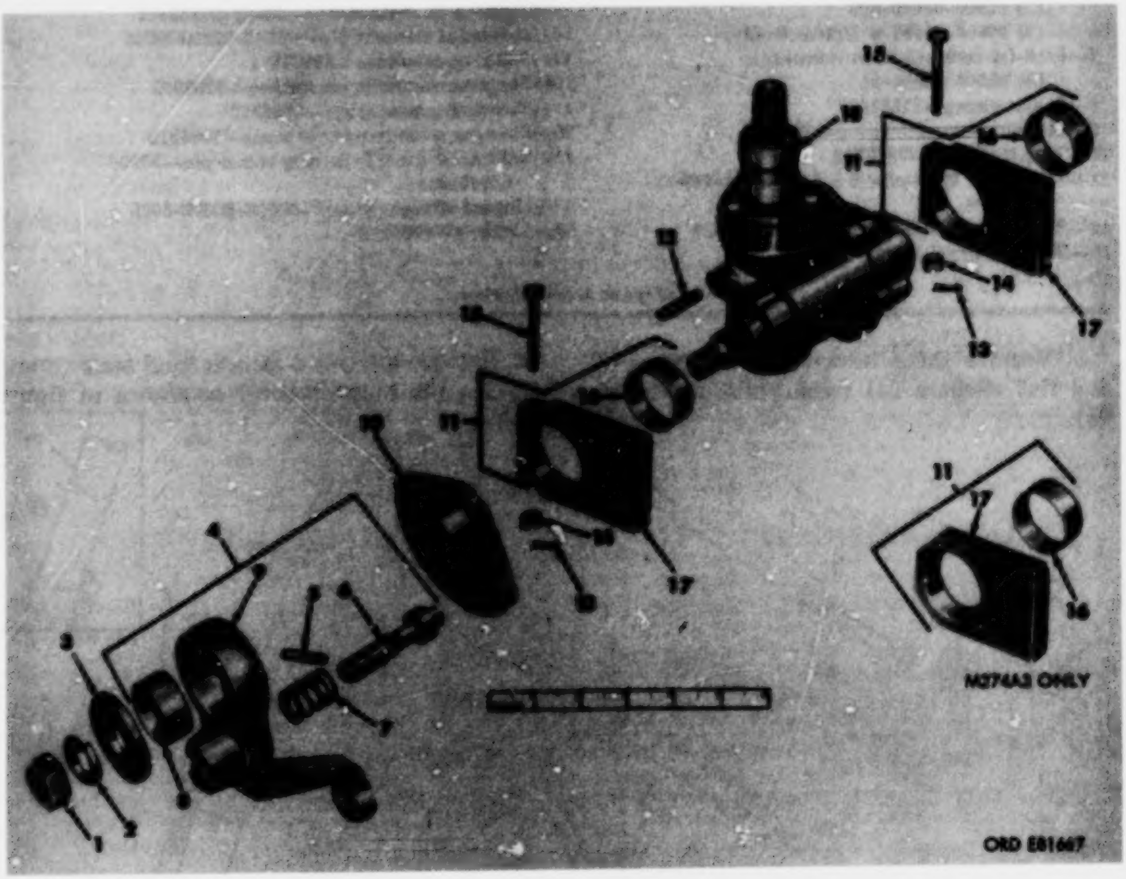
b. Remove three hexagon-head screws (3) and flat washers (4) freeing the upper cover (5).

c. Remove the two camshaft oil seals (6 and 7) from the upper cover as shown in figure 4–7.



1—5/16-18 hex nut—96906-35691-53
2—5/8-in. lockwasher—96906-35338-50
3—Flat washer—7760071
4—Steering arm assembly
  —7966750 (M274A3 only)
  —7966750-1
5—3/16-in. dia 1-3/4-in. lg spring pin—
  96906-9048-176
6—Shoulder-headed pin—7966823
7—Helical compression spring—7966824
8—Steering arm sleeve bearing
  —7760072 (M274A3 only)
  —10946836
9—Steering arm
  —8336205 (M274A3 only)
  —8336205-1
10—Locking plate
  —7966783 (M274A3 only)
  —7966783-1
11—Trunnion support assemblies
  —8336206 (M274A3 only)
  —11592080
12—1/4-in. dia x 1-3/8 in. lg spring pin—96906-904-235
13—3/32-in. dia x 1-in. lg cotter pin—96906-24665-285 (M274A2, M274A4 and M274A5)
14—3/8-24 slotted hex nut—96906-35692-625 (M274A2, M274A4 and M274A5)
15—3/8-24 x 2-1/8 hex-head bolt—96906-51106-66 (M274A2, M274A4 and M274A5)
16—Sleeve bearing
  —8336372 (M274A3 only)
  —10946837
17—Trunnion support
  —7760073 (M274A3 only)
  —11592079
18—Steering gear assembly—7043998

Figure 4-4. Disassembly or assembly of steering arm and trunnion support assemblies.

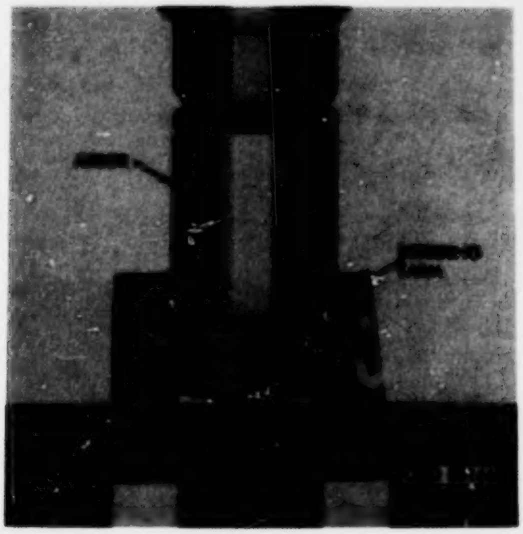
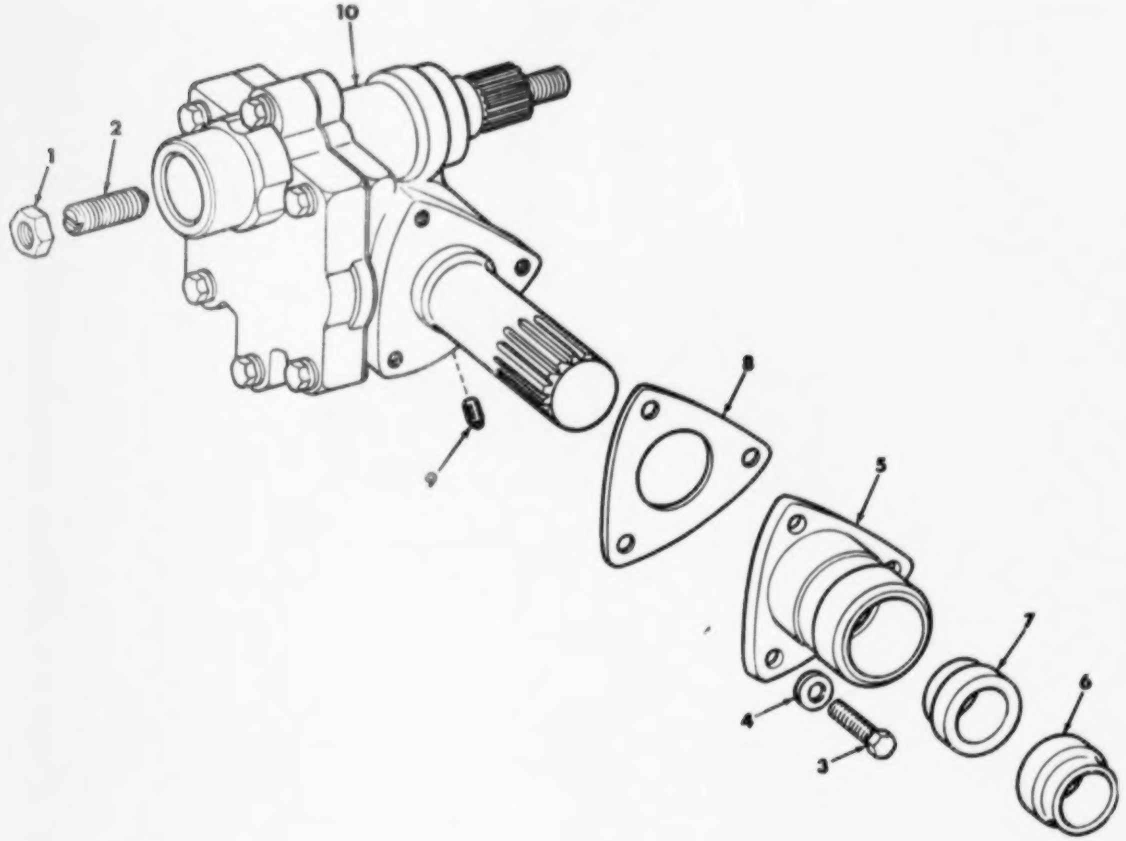


Figure 4-5. Removing or installing steering arm sleeve bearing.



1—7/16-20 jam hex nut—272121
2—7/16-20 x 7/8-in. lg setscrew—7696342
3—5/16-18 x 3/4-in. lg hex-head capscrew—179816
4—5/16-in. flat washer—7412883
5—Cover (NPN)
6—Seal—8716934
7—Seal—8716939
8—Shim set—7371431
9—1/8-27 pipe plug—143932
10—Steering gear (NPN)

Figure 4-6. Steering gear assembly—exploded view.

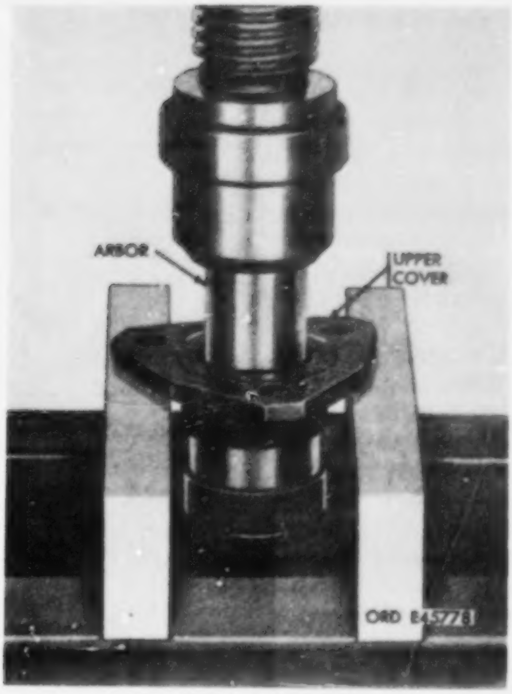
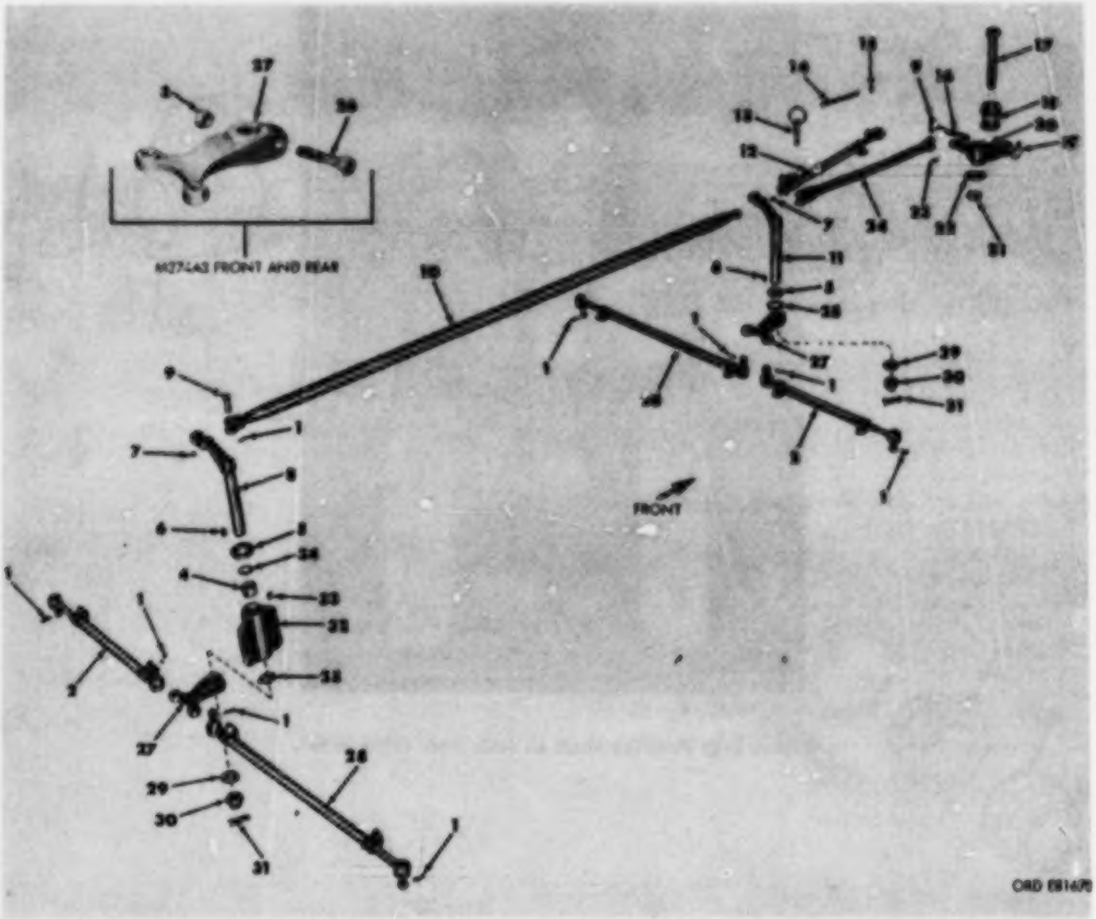

ARBOR
UPPER COVER
ORD E45778

Figure 4-7. Pressing shaft oil seals from upper cover.

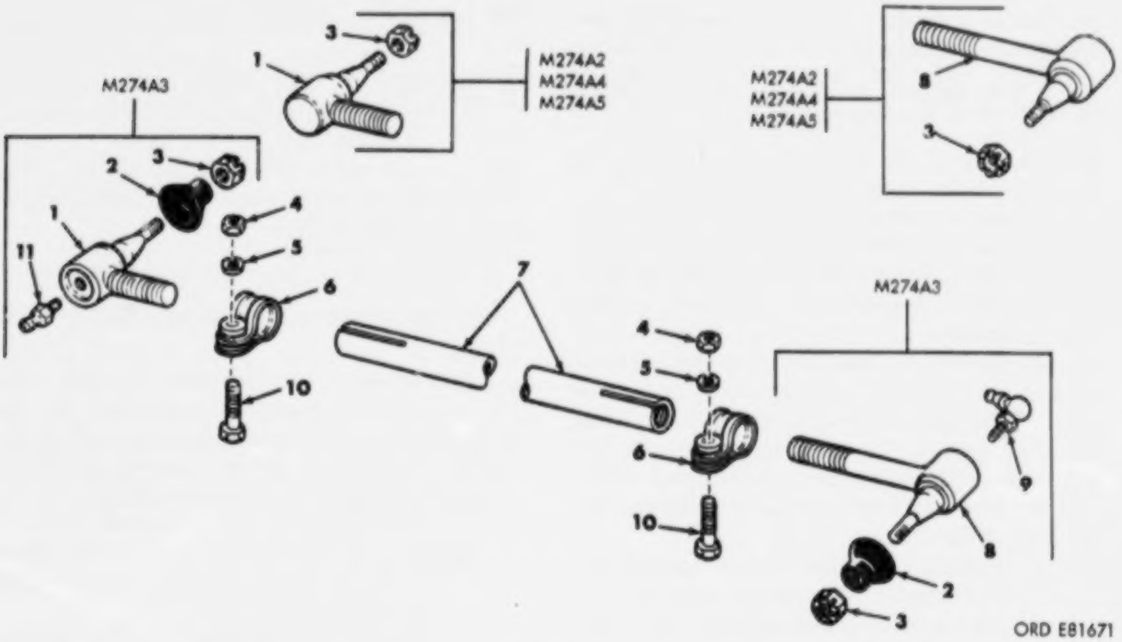


1—3/32-in. dia x 1-in. lg cotter pin—96906-24665-285
2—Steering tie rod assembly—7966816-1
3—3/8-24 self-locking hex nut—443336 (M274A3 only)
4—Needle bearing—713759
5—Recessed washer—8336163
6—5/32 x 3/4-in. Woodruff key—124548 (M274A3 only)
7—1/4-28 straight lubrication fitting—96906-15001-4
8—Upper rear bellcrank steering arm
—7966726 (M274A3)
—11592065 (M274A2 and M274A4)
9—Headed straight pin—8716942
10—Steering connecting rod—8336209
11—Upper front bellcrank steering arm
—7966725 (M274A3 only)
—11591959 (M274A4 and M274A5)
12—Draglink assembly—7966814-1
13—Quick-release pin—96906-17990-812 (M274A2, M274A3 and M274A4)
14—Chain—8336287
15—No. 2 x 1/4-in. lg drivescrew—96906-21318-15
16—Headed straight pin—7045670
17—3/4-16 x 5-1/2-in. lg hex-head capscrew—96906-90727-200
18—Bellcrank sleeve bearing—7536196
19—Snap clip—8332074
20—Tow bar bellcrank—8336045
21—3/4-16 self-locking hex nut—96906-20364-1216

Figure 4-8. Steering system rods, levers, links, and tow bar bellcranks—exploded view.

22—13/16-in. flat washer—96906-27183-24
23—1/8-in. dia x 7/8-in. lg cotter pin—96906-24665-363
24—Tow bar draglink assembly
    —8336222
    —11592067 (M274A5 only)
25—Retaining ring—10946838 (M274A2, M274A4 and M274A5)
26—3/8-24 x 2-in. lg hex-head capscrew—120678 (M274A3 only)
27—Lower bellcrank steering arm
    —7966724 (M274A3)
    —11591960 (M274A2, M274A4 and M274A5)
28—Steering tie rod assembly—7966815-1
29—5/8-in. flat washer—96906-27183-21 (M274A2, M274A4 and M274A5)
30—5/8-18 slotted hex nut—96906-35692-1025 (M274A2, M274A4 and M274A5)
31—3/16-in. dia x 1-1/4-in. lg cotter pin—96906-24665-493 (M274A2, M274A4 and M274A5)
32—Bracket, rear steering arm—8336165 (all except M274A5)
33—1/8 NPTF straight lubrication fitting—96906-15003-1 (all except M274A5)
34—Plain encased seal—7966727 (all except M274A5)

Figure 4-8.—Continued.



1—Tie rod end
    —7324369
    —7966813 (M274A3 only)
2—Dust cover—7760070
3—3/8-24 slotted hex nut—96906-35692-625
4—5/16-24 plain hex nut—96906-35690-525
5—5/16-in. lockwasher—96906-35338-26
6—Clamp—7760089
7—Tube
    —8336160-1, 8336161 (M274A3 only)
    —8336160-2, 8336162 (M274A3 only)
    —8336160-3, 8336160 (M274A3 only)
8—Tie rod end—7324386
8—Tie rod end—7966905 (M274A3 only)
9—1/4-28 elbow lubrication fitting—96906-15001-4 (M274A3)
10—5/16-24 x 1-1/4 hex-head screw—96906-35292-36
11—1/4-28 straight lubrication fitting—96906-15001-1 (M274A3)

Figure 4-9. Steering tie rod assembly—exploded view.

Section III. CLEANING, INSPECTION, AND REPAIR

4-8. Cleaning

a. Wash all parts in drycleaning solvent or mineral spirits paint thinner. Remove any hard crusts that have solidified, with cleaning solvent applied to a stiff bristle brush.

b. Clean all machined surfaces of steering gear components with lint-free cloths.

c. After washing parts dry them with compressed air.

Caution: **Bearings must not be dried or spun with compressed air. Refer to TM 9-214 for the care and maintenance of bearings.**

4-9. Inspection

a. Steering System Rods, Levers, Links, and Towing Bar Bellcrank.

Note. Key numbers shown below refer to figure 4-8 except where otherwise indicated.

(1) Inspect all threaded parts for any signs of excessive wear or damage.

(2) Inspect tie rod assemblies (2 and 28) for any cracks or distortion. Also inspect tie rod ends (1 and 8, fig 4-9) for lost motion of the ball in the socket.

(3) Inspect bellcrank steering arms (8, 11 and 27) for any damage. Inspect all bearing surfaces and clevis pin holes according to those limits specified in repair standards in paragraph 4-11. Inspect tapered holes for indications of distortion.

(4) Inspect roller needle bearing (4) for any signs of damage or wear according to those limits specified in repair standards of paragraph 4-11.

(5) Inspect all clevis pins and pin assemblies for wear according to those limits specified in the repair standard of paragraph 4-11.

(6) Inspect steering connecting rod (10) and draglink assemblies (12 and 24) for any cracks or distortions. Inspect clevis pin holes according to those limits specified in the repair standards of paragraph 4-11.

(7) Inspect tow bar bellcrank (20) for any cracks or distortion. Also inspect clevis pin hole and bellcrank sleeve bearing (18) against those limits specified in the repair standards of paragraph 4-11.

b. Steering Wheel, Column Assembly, and Tube Brace.

Note. Key numbers shown below refer to figure 4-3.

(1) Inspect serrations in steering wheel (2), steering wheel shaft (13), and the steering wheel shaft coupling (12) for burs, nicks, or any other signs of damage.

(2) Inspect steering wheel (2) for cracks or distortion.

(3) Inspect all shafts and tubes for cracks, distortion, or other signs of damage. Also inspect clevis pin holes and clevis pins against those limits specified in repair standards of paragraph 4-11.

c. Steering Arm Assembly and Supports.

Note. Key numbers shown below refer to figure 4-4.

(1) Inspect steering arm bearing (8) against those limits specified in the repair standards of paragraph 4-11.

(2) Inspect trunnion support bushings (16) against those specified in the repair standards of paragraph 4-11.

(3) Inspect splines in the locking plate (10) for nicks, burs, or other signs of damage.

(4) Inspect all components for any cracks or distortion. Also inspect machined surfaces for burs or nicks.

d. Steering Gear Assembly. Refer to figure 4-6. Inspect housing (10) for signs of cracks. Also inspect upper cover (5) for any cracks or nicks on machined surfaces.

4-10. Repair

a. General. The following subparagraphs cover only those parts that are repairable. Parts not covered must be replaced if they fail to pass inspection.

b. Steering System Rods, Levers, Links, and Tow Bar Bellcrank.

(1) Minor damage to threaded parts may be corrected by the use of a tap or die. Major damage requires replacement of the damaged part.

(2) If the tow bar bellcrank bearings are worn beyond the limits specified, replace the bearings as shown in figure 4-2.

(3) Minor bends to steering connecting rod, tie rod assemblies, or draglink assemblies may be straightened with a hammer on a flat surface.

c. Steering Wheel, Column Assembly, and Tube Brace.

(1) Burs or minor nicks on serrations in the steering wheel, steering wheel shaft, or shaft coupling may be removed with a fine mill file.

(2) Minor bends to steering wheel column, shaft, support brace, and inner shaft may be straightened with a hammer on a flat surface.

d. Steering Arm Assembly and Supports.

(1) Burs or minor nicks on splines in lever shaft locking plate may be removed with a fine mill file.

(2) Minor bends in steering arm may be straightened with a hammer on a flat surface. Minor cracks may be welded.

(3) Burs or nicks on machined or bearing surfaces may be removed with crocus cloth.

e. Steering Gear Assembly.

(1) Minor burs or nicks on splines on the steering camshaft or lever shaft may be removed with a three-corner file.

(2) If lever shaft or bearings are badly worn or damaged, replace steering gear assembly.

(3) Burs or nicks on machined surfaces in housing, side cover, or upper cover may be removed with crocus cloth.

(4) If nut threads are damaged, replace nut.

4-11. Repair Standards

a. General. The repair standards included herein give the minimum, maximum, and key clearances of new or rebuilt parts. They also give wear limits which indicate that point to which a part or parts may be worn before replacement in order to receive maximum service with minimum replacement. Normally, all parts which have not been worn beyond the dimensions shown in the "Wear limits" column, or damaged from corrosion, will be approved for service. An asterisk (*) in the "Wear limits" column indicates that the part or parts should be replaced when worn beyond the limits given in the "Size and fit of new parts" column. In the "Size and fit of new parts" column, the letter "L" indicates a loose fit (clearance) and the letter "T" indicates a tight fit (interference).

Table 3. Repair Standards

b. Steering Bellcrank Bearings.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
4-8	4	Inside of diameter of bellcrank needle bearings.	0.875	0.8755
	8	Outside diameter of steering bellcrank.	0.875 to 0.8755	0.8740
	4-8	Fit of steering bellcrank in bearing.	0.0000 to 0.0005T	0.0015L

c. Clevis Pins and Bolt.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
4-8	8-11	Diameter of hole in steering bellcrank.	0.498 to 0.500	0.502
	9	Diameter of clevis pin.	0.4960 to 0.4975	0.494

Table 3. Repair Standards—Continued.

c. Clevis Pins and Bolt. - Continued

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
	8-9	Fit of rear steering bellcrank on clevis pin.	0.0005L to 0.0040L	0.008L
	10	Diameter of hole in steering connecting rod.	0.499 to 0.501	0.502
	9-10	Fit of rear-end steering connecting rod to clevis pin.	0.0015L to 0.0050L	0.008L
	13	Diameter of pin assembly.	0.4970 to 0.4985	0.495
	9-24	Fit of front-end steering connecting rod to pin assembly.	0.0005L to 0.0040L	0.0007L
	24	Diameter of rear-hole rear-end bellcrank draglink.	0.502 to 0.504	0.506
	13-24	Fit of rear-hole rear-end bellcrank draglink to pin assembly.	0.0035L to 0.0070L	0.011L
	12	Diameter of front-hole rear-end draglink.	0.498 to 0.500	0.502
	9-12	Fit of front-hole rear-end bellcrank draglink to clevis pin.	0.0005L to 0.0040L	0.008L
	9-12	Diameter of front-hole rear-end bellcrank draglink to clevis pin.	0.4980 to 0.5010	0.503
	9-24	Fit of front-end tow bar draglink on clevis pin.	0.005L to 0.0050L	0.009L
	9	Diameter of clevis pin.	0.4960 to 0.4975	0.494
	17	Diameter of bolt.	0.7410 to 0.7500	
	18	Inside diameter of bellcrank sleeve bearing.	0.750 to 0.755	
	17-18	Fit of bellcrank sleeve bearing on bolt.	0.0000 to 0.014L	
	20	Diameter of clevis pin hole in tow bar bellcrank.	0.500 to 0.505	0.507
	9-20	Fit of clevis pin in tow bar bellcrank.	0.004L to 0.014L	0.018L

d. Steering Wheel, Column Assembly, and Tube Brace.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
4-3	23	Diameter of clevis pin hole in clevis.	0.375 to 0.380	0.382
	19	Diameter of clevis pin hole in inner brace steering tube shaft.	0.374 to 0.376	0.378
	22	Diameter of clevis pin.	0.368 to 0.373	0.364
	22-23	Fit of clevis on clevis pin.	0.002L to 0.012L	0.020L
	19-22	Fit of shaft on clevis pin.	0.001L to 0.008L	0.014L
	20	Diameter of clevis pin hole in steering shaft tube support brace.	0.375 to 0.380	0.384
	17	Diameter of clevis pin hole in steering column assembly.	0.375	0.378
	16	Diameter of clevis pin.	0.368 to 0.373	0.364
	16-20	Fit of shaft tube brace on clevis pin.	0.002L to 0.012L	0.020L
	16-17	Fit of steering column assembly on clevis pin.	0.002L to 0.007L	0.014L

e. Steering Arm and Support.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
4-4	8	Inside of diameter of steering arm bearing.	1.380 to 1.381	

Table 3. Repair Standards—Continued.

e. Steering Arm and Support.—Continued

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
	10	Diameter lever shaft locking plate hub.	Variable, expands with taper application	
	8–10	Fit of steering arm bearing on locking plate hub.	0.0010L to 0.004L	0.007L
	11	Inside diameter trunnion support bushing.	1.625 to 1.627	1.628
	18	Diameter steering gear trunnion.	1.620 to 1.624	1.618
	11–18	Fit of trunnion support bushing on trunnion.	0.001L to 0.007L	0.010L

Section IV. ASSEMBLY AND INSTALLATION

4–12. General

Except for special steps, assembly is the reverse of disassembly. Therefore, refer to paragraphs 4–4 through 4–7, and figures 4–2 through 4–7, reversing these steps.

4–13. Assembly of Steering Gear

a. Refer to figures 4–6 and 4–7 for assembly of two shaft oil seals (6 and 7) into upper cover (5).

b. Refer to figure 4–6 for assembly of upper cover to steering gear housing (10). Make sure shims (8) are installed between upper cover and housing, for proper adjustment. Secure cover to housing with three flat washers (4) and three capscrews (3).

c. Refer to figure 4–6 and tighten setscrew (2) into place. Do not completely tighten locking hexagon nut (1) in place until adjustment of steering gear assembly is made in paragraph 4–14.

4–14. Adjustment of Steering Gear Assembly

a. General. Two adjustments are required on the steering gear assembly. The first adjustment, preload on the cam thrust bearings, is made prior to installing the steering gear assembly in the vehicle. The second, backlash of the stud in the cam groove, is made after completing the cam thrust bearing adjustment and with the steering gear assembly mounted in the vehicle.

b. Adjust Cam Thrust Bearings.

(1) Find the midposition of steering gearshaft travel by counting the number of turns required to turn the shaft from one extreme position to the other and back off one-half the number of turns. Check preload of the cam thrust bearings by rotating the shaft with a torque indication wrench. Read torque wrench while wrench is in motion, to obtain accurate results. The pull at midposition must be 1- to-4 lb in. torque.

(2) If torque is greater than the maximum value, add a 0.003-in. shim between the upper cover and housing. Add shims as required to attain proper preload. If torque is below the minimum value, reduce shims as required.

c. Adjust Lever Shaft Stud.

(1) Install the steering gear assembly in the vehicle. Refer to TM 9–2320–246–20.

(2) Rotate the steering wheel from one extreme position to the other, making note of the number of turns required. Turn the steering wheel back one-half the total turns. This places the stud in the lever shaft in the normal straightahead position.

(3) Rotate the steering wheel with torque indicating wrench. Read torque wrench while wrench is in motion. Use a screwdriver to adjust the setscrew (2, fig 4–6) until the

pull at the center position is 5- to-9 lb in. torque. After adjustment, tighten the locknut securing the setscrew.

4-15. Assembly of Steering Arm and Trunnion Support Assemblies

Refer to figure 4-4 and reverse the sequence of disassembly steps.

4-16. Assembly of Steering Wheel, Column, Assembly, and Tube Brace

Refer to figure 4-3 and reverse the sequence of disassembly steps.

4-17. Installation and Adjustment

Refer to TM 9-2320-246-20 for installation and adjustment of steering system components.

CHAPTER 5

REPAIR OF FRONT AXLE ASSEMBLY

Section I. DESCRIPTION AND DATA

5-1. Description

a. General. The front axle (fig 5-1) is mounted directly between the flanges of the two frame tubes, and flanges of the two front support tubes. Front axle assembly consists of three main subassemblies: the gear carrier assembly with the brake assembly mounted on the drive pinion shaft, and two front drop gear axle housings. The gear carrier assembly has a bearing-enclosed drive pinion, a drive gear, and a brake assembly. The two front drop gear axle housings are identical to those used on the rear of the four-wheel steering M274 series vehicles.

b. Operation. Power from the propeller shaft is transmitted through the companion flange to the drive pinion. From the pinion, power flows to the drive gear which rotates in a cage secured between the carrier assembly and the left drop gear axle housing. From the drive gear, two splined axle shafts carry the power to the universal joints through gear trains located in the outer end of the axle housings. Steering knuckle covers attached to the outer ends of the housings cover the gear trains and serve as attachment points to which the steering knuckles are pivoted.

c. Differences Among Models.

(1) *Drop gear assembly.* The lower portion of the drop gear axle housing casting on M274A2, M274A4 and M274A5 is larger than the housing casting on M274A3. In addition, on top of the axle housing of M274A2, M274A4 and M274A5 models, there is a pipe plug in place of the vent assembly as on M274A3.

(2) *Brake assembly.* The brake assembly on M274A2, M274A4 and M274A5 is different from M274A3 in that it has a larger brakelining area giving more positive braking action, and a brakedrum casting with multiple ribs to increase the cooling area. In addition, the brake assembly on M274A2, M274A4 and M274A5 has two brakeshoes, whereas the M274A3 has a brakeband.

5-2. Data

Make	ordnance
Type	drop gear drive
Lubricant capacity:	
Gear carrier assembly	6 oz
Axle housing	12 oz ea
Universal joint:	
Make	Bendix
Type	constant velocity
Size	large 3-3/16 in.
Maximum turning angle	27 deg
Ratio drive pinion to drive gear	1.866-to-1
Ratio axle shaft to universal joint	2.2-to-1
Axle shaft to universal joint gears	helical spur
Drive gear set:	
Pinion	15 teeth, lh spiral bevel
Gear	28 teeth, rh spiral bevel
Brake:	
Type	mechanical, internal expanding
Diameter of drum:	
M274A3	5.500 in.
M274A2 - M274A4 - M274A5	7.375 in.
Width:	
M274A3	1.375 in.
M274A2 - M274A4 - M274A5	1.500 in.
Area of lining:	
M274A3	17.300 sq in.
M274A2 - M274A4 - M274A5	20.938 sq in.

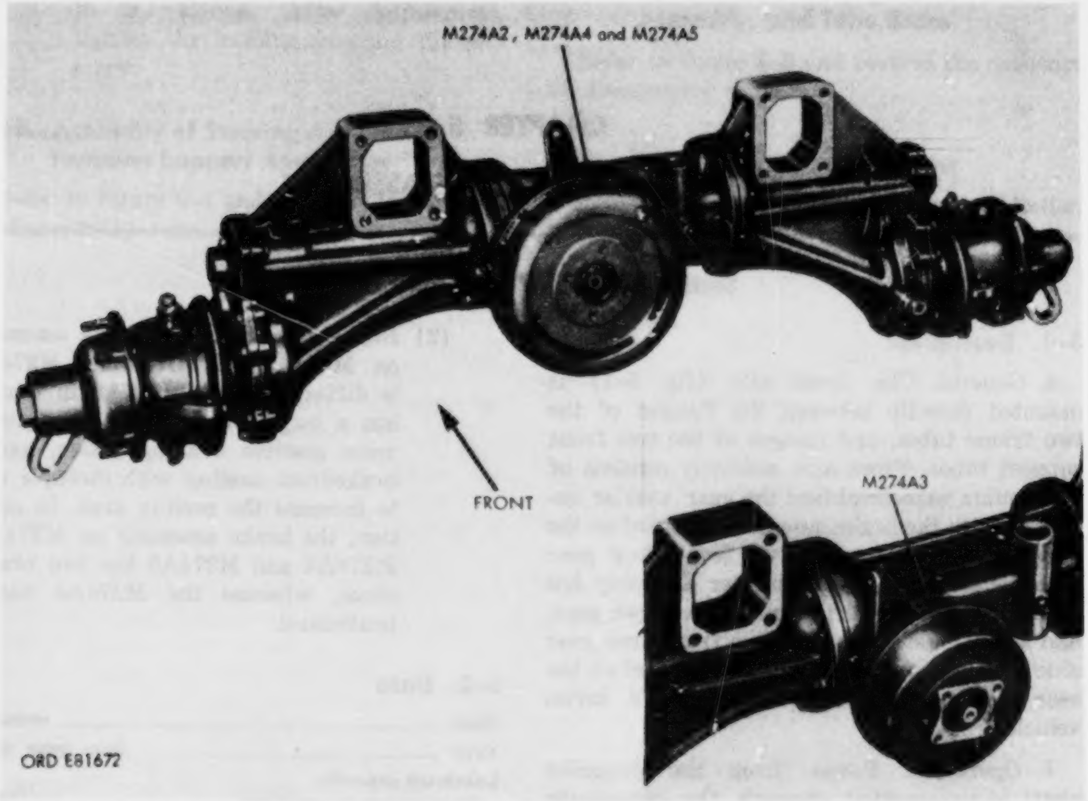


Figure 5-1. Front axle assembly M274A2, M274A4 and M274A5 with inset of M274A3 brake.

Section II. REMOVAL AND DISASSEMBLY

5-3. General

a. Instructions and illustrations in the following paragraphs describe the removal and disassembly of components of the front axle assembly.

b. The exploded views in this chapter provide visual reference to the components of the front axle assembly, and parts identification.

c. Discard all gaskets at disassembly and replace with new ones at assembly.

5-4. Removal and Disassembly Into Subassemblies

a. Removal. Refer to TM 9-2320-246-20.

b. Disassembly into Subassemblies.

(1) Remove six drain plugs and drain lubricant from right and left front drop gear axle housings and gear carrier assembly (fig 5-2).

(2) Remove six plain hexagon nuts and six lockwashers (fig 5-2) from both sides of gear carrier assembly and carefully pull each front drop gear axle housing from studs.

(3) Slide off gear bearing cage assembly and shims from gear carrier assembly.

(4) Remove and discard gasket on left drop gear housing flange or the gear bearing cage assembly . . . whichever the gasket adheres to.

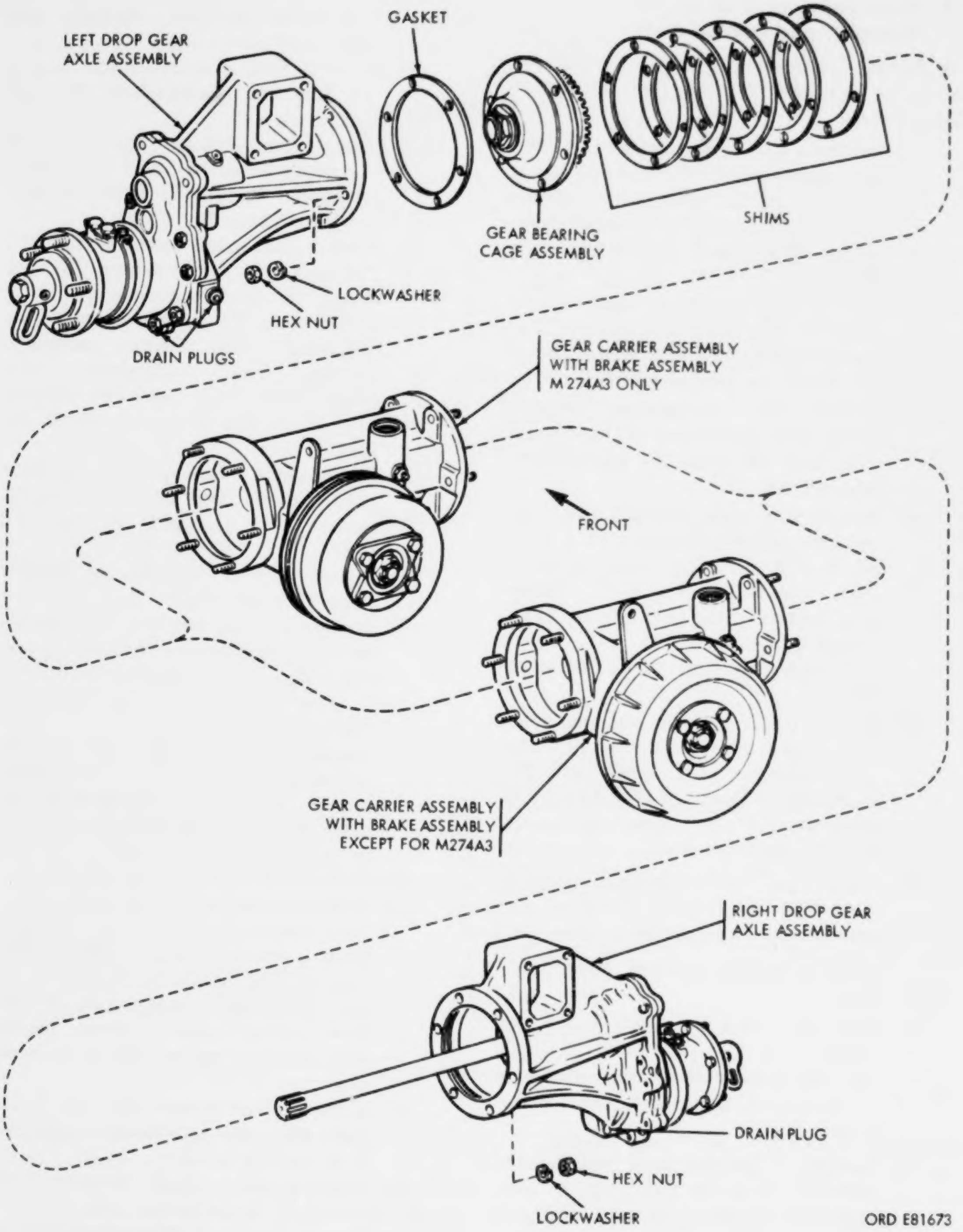

GASKET
LEFT DROP GEAR AXLE ASSEMBLY
SHIMS
GEAR BEARING CAGE ASSEMBLY
LOCKWASHER
HEX NUT
DRAIN PLUGS
GEAR CARRIER ASSEMBLY WITH BRAKE ASSEMBLY M274A3 ONLY
FRONT
GEAR CARRIER ASSEMBLY WITH BRAKE ASSEMBLY EXCEPT FOR M274A3
RIGHT DROP GEAR AXLE ASSEMBLY
DRAIN PLUG
HEX NUT
LOCKWASHER
ORD E81673

Figure 5-2. Disassembly of front axle into components—exploded view.

5-5. Disassembly of Gear Carrier Assembly and Related Parts

a. Partial Disassembly of Gear Carrier Assembly on M274A3 Vehicle Only. (Refer to figure 5-3.)

(1) Remove self-locking nut (1) and flat washer (2) from the drive pinion gearshaft of the gear carrier subassembly (27), freeing drive shaft companion flange and brakedrum subassembly.

(2) Remove four hexagon-head screws (3) and four split lockwashers (4) freeing drive shaft companion flange (5) from the brakedrum (6).

(3) Remove the brakeband locating spring (7), brakeband (8) and actuating cam (9) from the gear carrier subassembly (27).

(4) Remove four plain hexagon nuts (10) and four split lockwashers (11) freeing the oil, dirt and liquid deflector (12). Remove gasket (13), brakeband support plate (14), gasket (15), nonmetallic washer (16), flat washer (17) and dirt and liquid deflector (18).

(5) Remove cotter pin (19) and cam actuating brake lever (20) from dirt and liquid deflector (18). Press plain encased seal (21) out of dirt and liquid deflector and remove spring tension clip (23) and cover (22).

(6) Remove gasket (24), bearing retainer plate (25), and shims (26) from the gear carrier subassembly.

(7) Remove bearing retainer with bearings (fig 5-4).

(8) Press tapered roller bearing cone and rollers, and tapered roller bearing cups out of bearing retainer as shown in figure 5-5. Refer to figure 5-6 for exploded view.

(9) Remove shims and drive pinion subassembly from the gear carrier subassembly (fig 5-7). Remove retaining ring from drive pinion and remove bearing.

*b. Partial Disassembly of Gear Carrier Assembly on Vehicles **M274A2**, **M274A4** and M274A5. (Refer to figure 5-8.)*

(1) Remove four hexagon-head screws (1), four split lockwashers (2), and brakedrum (3).

(2) Remove self-locking hexagon nut (4), flat washer (5), and drive shaft companion flange (6) from the gear carrier subassembly (22).

(3) Remove four plain hexagon nuts (7) and four split lockwashers (8), releasing the brake assembly (9).

(4) Disassemble the brake assembly by removing two helical extension springs (10), brakeshoes (11), brake lever (12), and two spacers (13) from the dirt and liquid deflector (14).

(5) Remove oil, dirt and liquid deflector (15), felt washer (16), nonmetallic washer (17), and plain encased seal (18).

(6) Remove gasket (19), bearing retainer plate (20) and shims (21).

(7) Remove bearing retainer subassembly and drive pinion as shown in figures 5-5 and 5-7, and disassemble bearing retainer subassembly as shown in figure 5-6.

(8) Remove shim and drive pinion subassembly from the gear carrier subassembly (fig 5-7). Disassemble the drive pinion subassembly as specified in *a.* (9) above (fig 5-7).

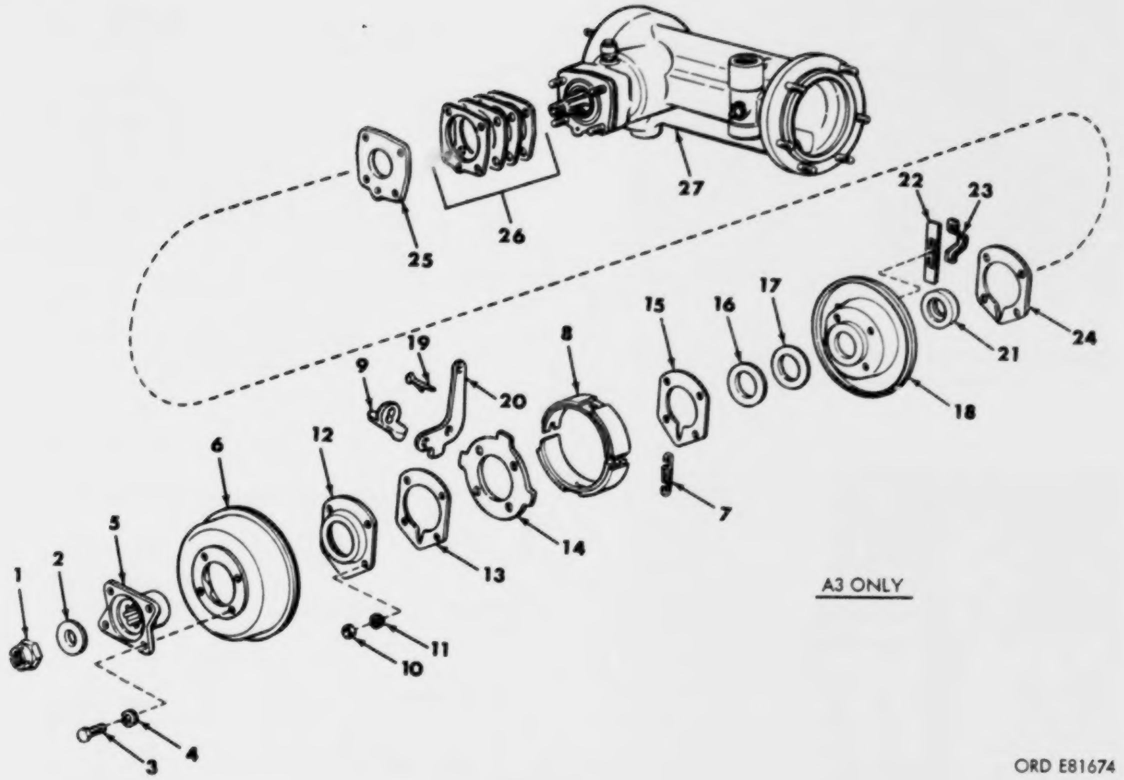
c. Disassembly of Gear Carrier Housing.

(1) Remove plain encased seal (fig 5-10) from gear carrier housing, using a suitable hooked tool. If seal is damaged in this procedure, replace it. Do not remove any studs, plugs, or vent from carrier housing unless inspection indicates replacement is a necessity.

(2) Remove plain encased seal (fig 5-11) from each end of bellcrank boss that is on carrier housing.

(3) Remove roller needle bearing from each end of bellcrank boss.

(4) Remove lubricant fitting from side of bellcrank boss.



1—3/4–16 self-locking hex nut—96906–20364–1216A
2—3/4 flat washer—96906–27183–23
3—5/16–24 x 1 hex-head screw (4)—7966811–1
4—5/16 lockwasher (4)—96906–35338–26
5—Drive shaft companion flange—7966699
6—Brakedrum—7966797
7—Spring—7036011
8—Brakeband—7018861
9—Cam—8764604
10—5/16–24 hex nut (4)—96906–51968–5
11—5/16 lockwasher (4)—96906–35338–45
12—Dirt and liquid deflector—7966796
13—Gasket—7966605
14—Plate—7018864
15—Gasket—7966605
16—Nonmetallic washer—7998708
17—Flat washer—7998707
18—Dirt and liquid deflector—7966795
19—3/32 x 1 cotter pin—96906–24665–285
20—Brake lever—7035922
21—Seal—7966683
22—Cover—7045738
23—Clip—7760078
24—Gasket—7966778
25—Plate—8336141
26—Shim set—8702427
27—Carrier assembly—NPN

Figure 5–8. Disassembly of gear carrier assembly and related parts, M274A3—exploded view.

d. Disassembly of Gear Bearing Cage and Associated Parts.

(1) *General.* The gear bearing cage is the same as the unit used in the rear axle and transmission assembly except the drive gear has right-hand spiraled teeth instead of left-hand as in the rear axle.

(2) *Disassembly.* Refer to figure 5–9 for key index numbers.

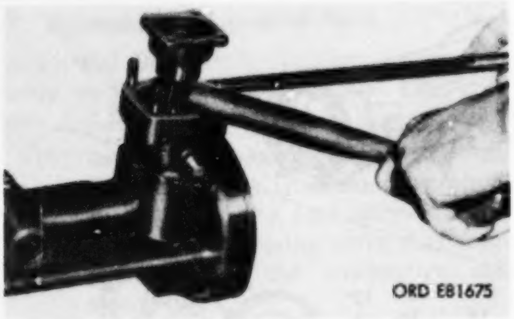


Figure 5-4. Using suitable tools to remove bearing retainer and drive pinion.

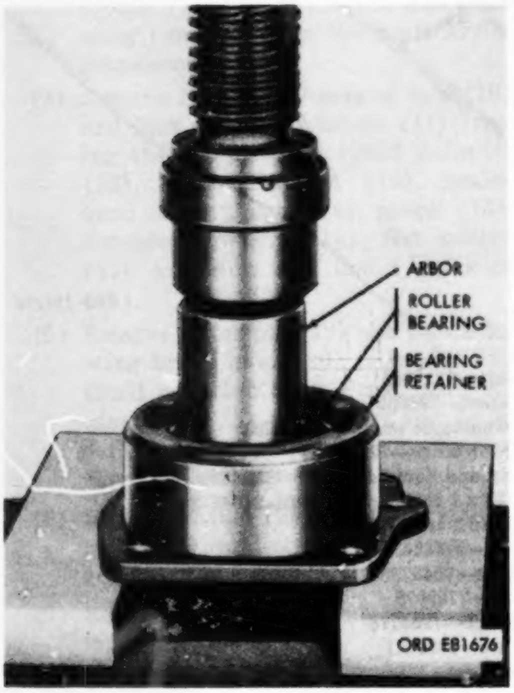

ARBOR
ROLLER BEARING
BEARING RETAINER
ORD E81676

Figure 5-5. Using arbor press to remove and install cone and rollers and cup in retainer.

(*a*) Straighten turned-up portion of key washer (2); remove plain hexagon nut (1) and key washer (2).

(*b*) Push driven gearshaft (3) out of bearing cage and related parts (7).

(*c*) Remove tapered roller bearing cone and roller (4) from bearing cage and related parts (7).

(*d*) Remove, identify, and tie together set of shims (5) and set aside for use during reassembly.

(*e*) Remove sleeve spacer (6) from bearing cage and related parts (7).

(*f*) Using a suitable press, remove bearing cup (9) and tapered roller bearing assembly (8) from bearing cage (10).

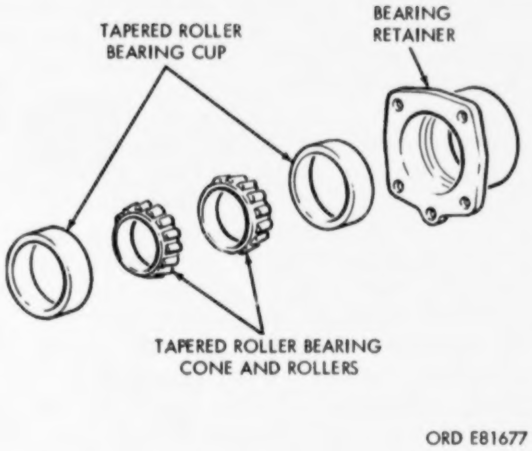

TAPERED ROLLER BEARING CUP
BEARING RETAINER
TAPERED ROLLER BEARING CONE AND ROLLERS
ORD E81677

Figure 5-6. Bearings and retainer—exploded view.

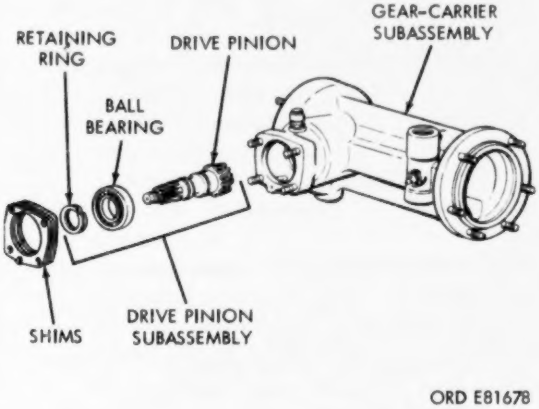
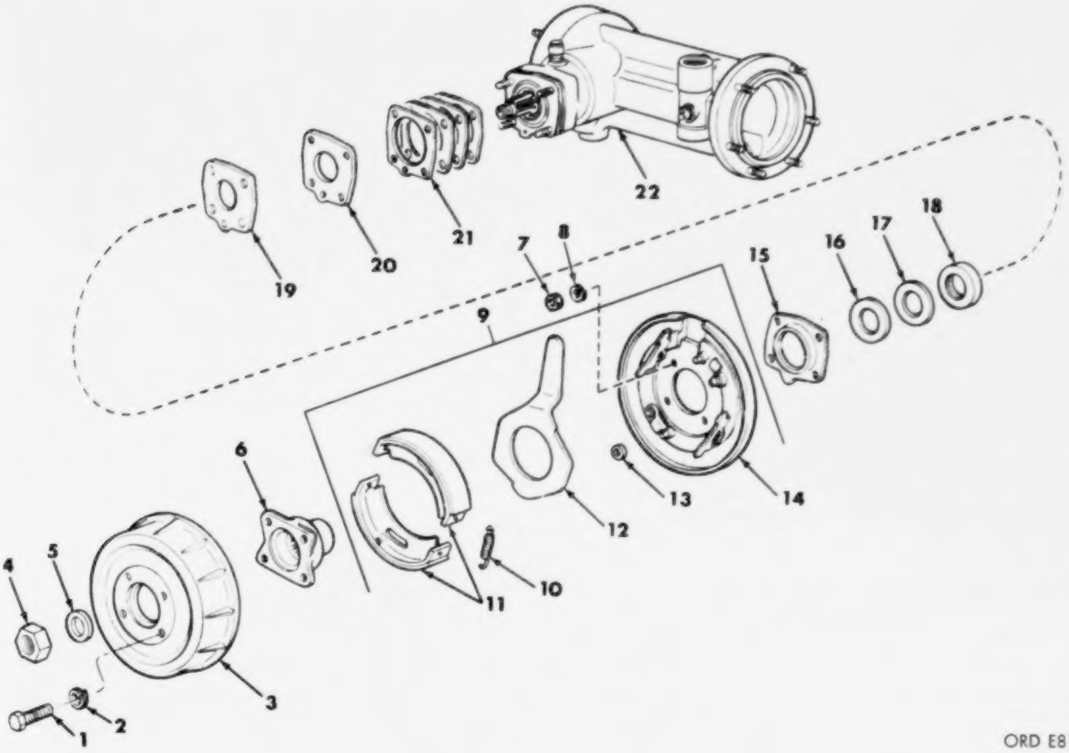

RETAINING RING
DRIVE PINION
GEAR-CARRIER SUBASSEMBLY
BALL BEARING
SHIMS
DRIVE PINION SUBASSEMBLY
ORD E81678

Figure 5-7. Removal of shims and drive pinion subassembly from gear carrier subassembly—exploded view.



ORD E81679

1—5/16-24 x 1 hex-head screw (4)—7966811-1
2—5/16 split lockwasher (4)—96906-35338-26
3—Brakedrum—11592010
4—3/4-16 self-locking hex nut—96906-20364-1216A
5—13/16 flat washer—96906-27183-23
6—Drive shaft companion flange—11592032
7—5/16-24 plain hex nut (4)—96906-51968-5
8—5/16 split lockwasher (4)-96906-35338-45
9—Brake assembly—10946843
10—Helical extension spring (2)—65909-935989
11—Brakeshoes and lining kit—11592073
12—Brake lever—65909-935990
13—Spacers (2)—65909-935991
14—Dirt and liquid deflector—65909-935979
15—Oil, dirt and liquid deflector—11592006
16—Felt washer—11592007
17—Nonmetallic washer—11592008
18—Plain encased seal—7966683
19—Gasket—7966778
20—Bearing retainer plate—8336141
21—Shims—5702427
22—Gear carrier subassembly—NPN

Figure 5-8. Disassembly of gear carrier assembly—all models except M274A3—exploded view.

5-6. Partial Disassembly

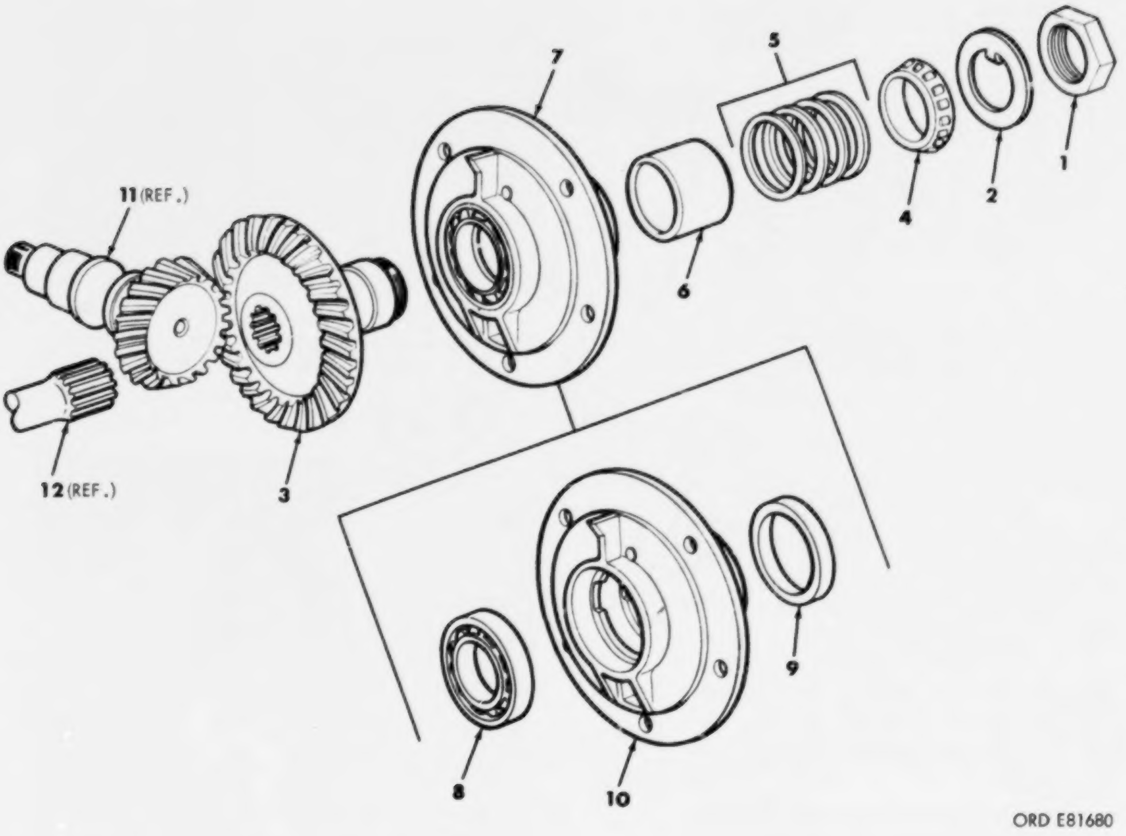
a. Drop Gear Axle Housing Assembly. Refer to TM 9-2320-246-20 for removal of wheel hub, steering knuckle and associated parts, and dust and moisture seal boot.

b. Removal and Disassembly of Universal Joint.

(1) Pull universal joint from steering knuckle cover (figs 5-12 and 5-17).

(2) Slide sleeve bearing off universal joint (fig 5-12).

(3) Place universal joint on wood block and drive retaining pin from outer shaft (fig 5-13).



1—Plain hex nut—7966689
2—Key washer—7966808
3—Driven gearshaft—8336217
4—Bearing cone—705391
5—Shims—5702426
6—Sleeve spacer—7966684
7—Bearing cage and related parts—NPN
8—Cone, cup and roller bearing assembly—96906-19081-45
9—Bearing cup—7998565
10—Bearing cage—7966917
11—Drive pinion—(ref)
12—Axle—(ref)

Figure 5-9. Disassembly or assembly of gear bearing cage—exploded view.

(4) Hold universal joint in a vertical position and tap outer shaft against wood block to remove center ball pin (fig 5-14).

(5) Place the inner shaft of the universal joint in a soft-jawed vise and turn shaft to one side. Turn center ball until opening for center ball pin is against one of the race balls (fig 5-15).

(6) Lift race balls from joint and turn outer shaft to opposite side, and remove remaining three race balls and center ball.

c. Removal and Disassembly of Steering Knuckle Cover.

Note. Complete disassembly of cover is not necessary unless inspection indicates damage to needle bearings or tapered roller bearing cups.

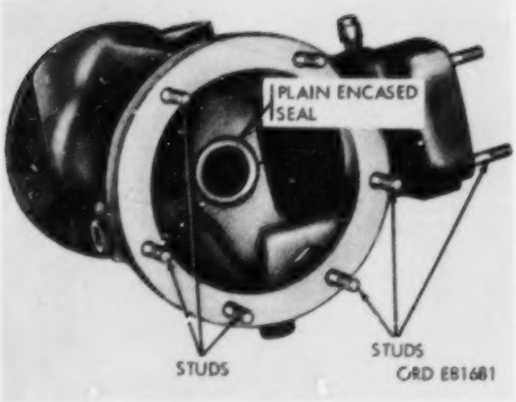

PLAIN ENCASED SEAL
STUDS
STUDS
ORD E81681

Figure 5-10. Removing or installing plain encased seal.

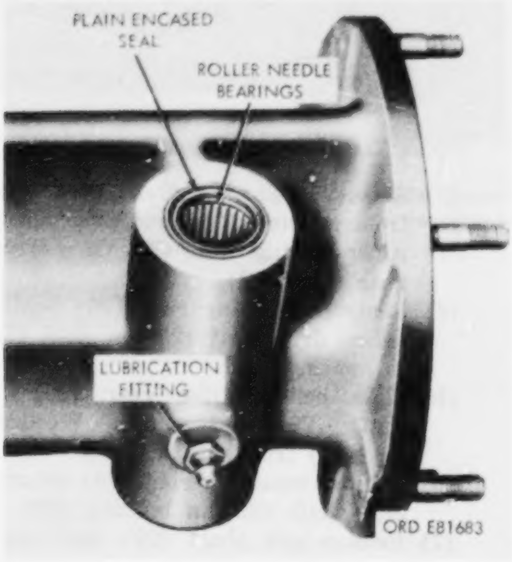

PLAIN ENCASED SEAL
ROLLER NEEDLE BEARINGS
LUBRICATION FITTING
ORD E81683

Figure 5-11. Removing or installing plain encased seals, roller needle bearings, and fitting.

(1) Remove two hexagon-head capscrews (10) and lockwashers (11) from the top of drop gear axle housing (fig 5-17). Remove eight hexagon nuts and lockwashers from sides and bottom of knuckle cover (8 and 9, fig 5-17).

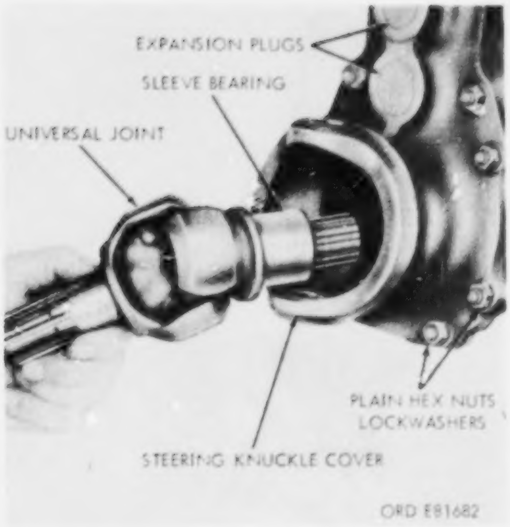

EXPANSION PLUGS
SLEEVE BEARING
UNIVERSAL JOINT
PLAIN HEX NUTS
LOCKWASHERS
STEERING KNUCKLE COVER
ORD E81682

Figure 5-12. Removing or installing universal joint and knuckle cover.

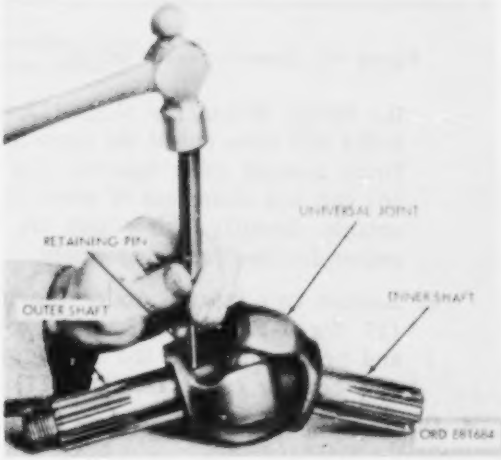

RETAINING PIN
UNIVERSAL JOINT
OUTER SHAFT
INNER SHAFT
ORD E81684

Figure 5-13. Removing or installing retaining pin.

(2) Pull steering knuckle cover from studs on housing and remove steering knuckle cover gasket (fig 5-17). Discard gasket.

(3) Drive two needle roller bearings (14, fig 5-17) out of knuckle cover from

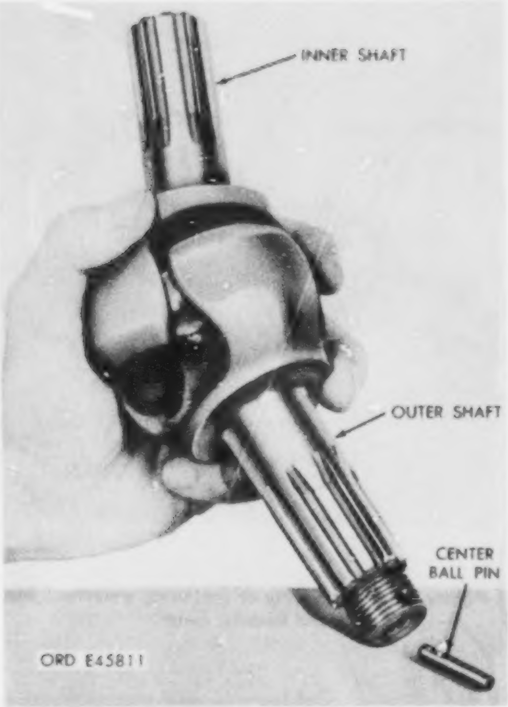


Figure 5-14. Removing center ball pin.

the inside. Expansion plugs (13, fig 5-17) will come out at the same time. Drive tapered roller bearing (fig 5-16) cup and shims out of cover from outside. Identify shims and tie together for use during assembly.

(4) Remove two tapered roller bearings (17, fig 5-17) from knuckle cover and press out from the inside, the two bearing cups (18, fig 5-17).

d. Disassembly of Drop Gear Axle Housing.

Note. Complete disassembly of drop gear axle housing is not necessary unless inspection indicates damage to needle roller bearing, tapered roller bearings or cups, headless straight pin, or plain studs.

(1) Remove helical idler gear (20) with thrust washers (21) on each hub, from housing (fig 5-17).

(2) Remove two thrust washers (21) from idler gear (20).

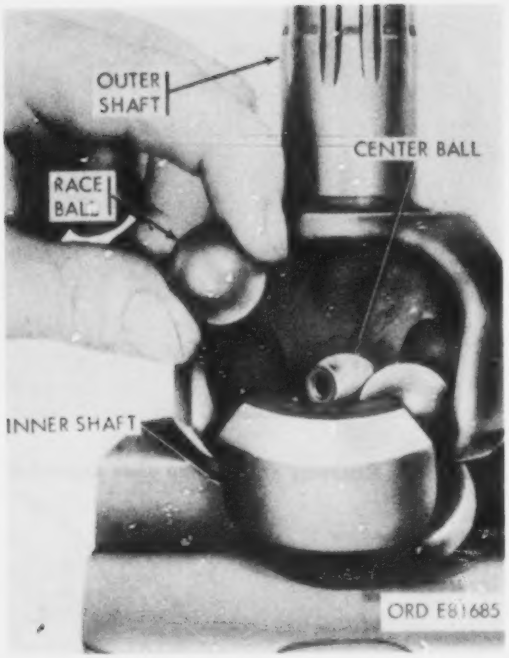


Figure 5-15. Removing or installing race balls.

(3) Remove helical driven gear (22) from housing (35) and two tapered roller bearing cones (23) from driven gear (fig 5-17).

(4) Remove retaining ring (26) holding helical drive gear (25) on shaft (29) in housing.

(5) Slide helical drive gear (25) off shaft (29) and remove Woodruff key (27) from shaft groove.

(6) Remove retaining ring (24) securing axle shaft (29) in housing (35).

(7) Remove axle shaft (29) and associated parts.

(8) Remove annular ball bearing (28) from axle shaft (29).

(9) Remove plain encased seal (30) from top of housing, and needle roller bearing (31) from center of housing.

(10) Remove tapered roller bearing cup (32) from housing. Do not remove 5/16-24 x 5/16-18 x 1-1/4 plain studs (33) and headless straight pin (34) from housing unless damaged.

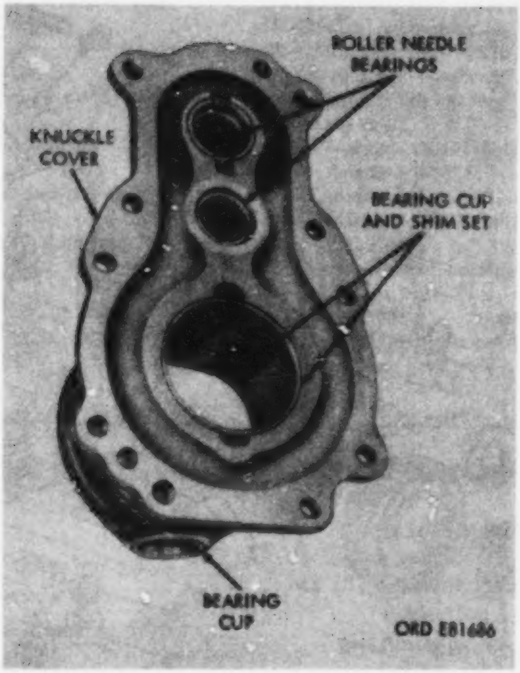
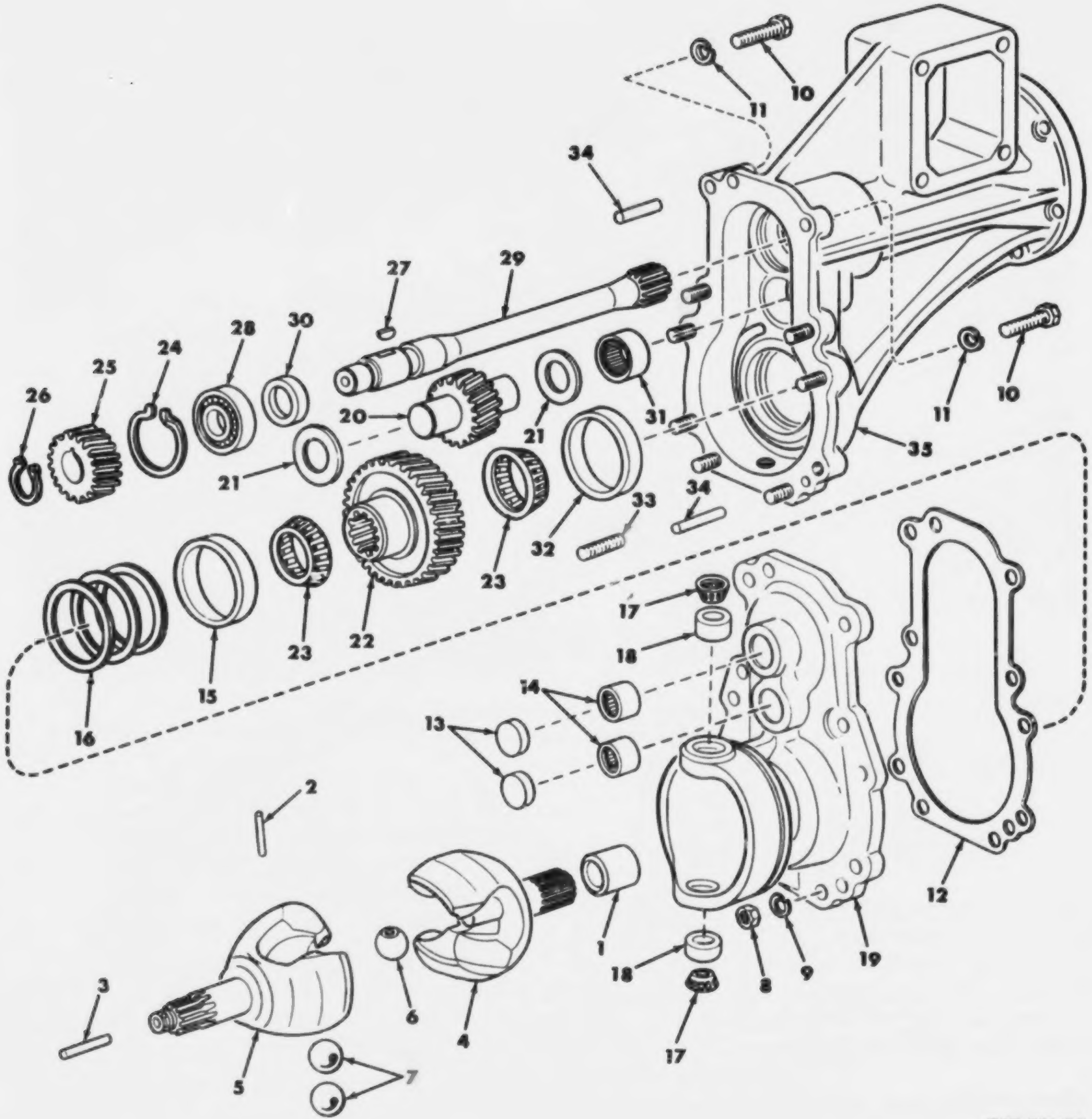

ROLLER NEEDLE BEARINGS
KNUCKLE COVER
BEARING CUP AND SHIM SET
BEARING CUP
ORD E81686

Figure 5-16. Removing or installing needle roller bearings and associated parts.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ORD E81687

1—Sleeve bearing—7966792
2—Retaining pin—7760096
3—Ball pin—7760095
4—Universal joint inner shaft—7760092
5—Universal joint outer shaft—7760093
6—Center ball—7760094
7—Race balls (4) NPN
8—5/16-24 plain hex nuts (8)—96906-51968-5
9—5/16-in. split lockwashers (8)—96906-35338-45

Figure 5-17. Front drop gear axle housing assembly, all models. Rear on M274A2, M274A3 and M274A4—exploded view.

10—5/16-18 x 1 hex-head capscrews (2) —96906-90725-34
11—5/16-in. split lockwashers(2)—96906-35338-45
12—Gasket—7966597
13—Expansion plugs (2)—8336138
14—Needle roller bearings (drive gear) (2)—96906-17131-26
15—Tapered roller bearing cup—7998565
16—Shim set—5702425
17—Tapered roller bearing cone and rollers (2) —705245
18—Tapered roller bearing cups(2)—706736
19—Steering knuckle cover—7966679
20—Helical idler gear—7966764
21—Thrust washers (2)—7966793
22—Helical driven gear—7966765
23—Tapered roller bearing cone and rollers (2)—705391
24—Retaining ring (axle shaft)—7966810
25—Helical drive gear (axle shaft)—7966763
26—Retaining ring—96906-16624-1093
27—3/16 x 7/8 Woodruff key—96906-35756-14
28—Annular ball bearing—700078
29—Axle shaft
  —short—7045746
  —long—7045745
30—Encased seal (axle shaft)—7966768
31—Needle roller bearing (idler gear)—96906-17131-26
32—Tapered roller bearing cup—7998565
33—5/16-18 x 5/16-24 x 1-1/4 plain studs (8)—7966528
34—Headless straight pins (2)—88044-122730
35—Rear drop gear axle housing—7966906-1

Figure 5-17.—Continued.

Section III. CLEANING, INSPECTION, AND REPAIR

5-7. Cleaning

a. Clean all parts in drycleaning solvent or mineral spirits paint thinner.

b. Use lint-free cloth to clean and dry all machined surfaces and gears.

c. Remove hard crusts from surface of parts with a stiff bristle brush that has been dipped in cleaning agent.

d. After cleaning, dry all parts except bearings, with dry compressed air.

Caution: **Bearings must not be dried or spun with compressed air. Refer to TM 9-214 for inspection, care, and maintenance of anti-friction bearings.**

5-8. Inspection

a. Brake Assembly M274A3 Only.

Note. **The key numbers shown below refer to figure 5-18.**

(1) Inspect brakedrum (6) for distortion or cracks. Inspect inside diameter of drum for wear beyond limits specified in repair standards (par. 5-10). Inspect threads in bolt holes for damage.

(2) Inspect actuating cam (9), cam actuating lever (16), and support plate (15) for distortion or wear beyond limits specified in repair standards (par. 5-10).

(3) Inspect brakeband assembly (14) for distortion and wear in the support plate slots. Inspect lining against limits specified in repair standards (par. 5-10).

(4) Inspect splines in drive shaft companion flange (5) for nicks, burs, or flat spots.

(5) Inspect plain encased seal (21) for wear or breaks in sealing surfaces. Inspect all parts for cracks or rough edges.

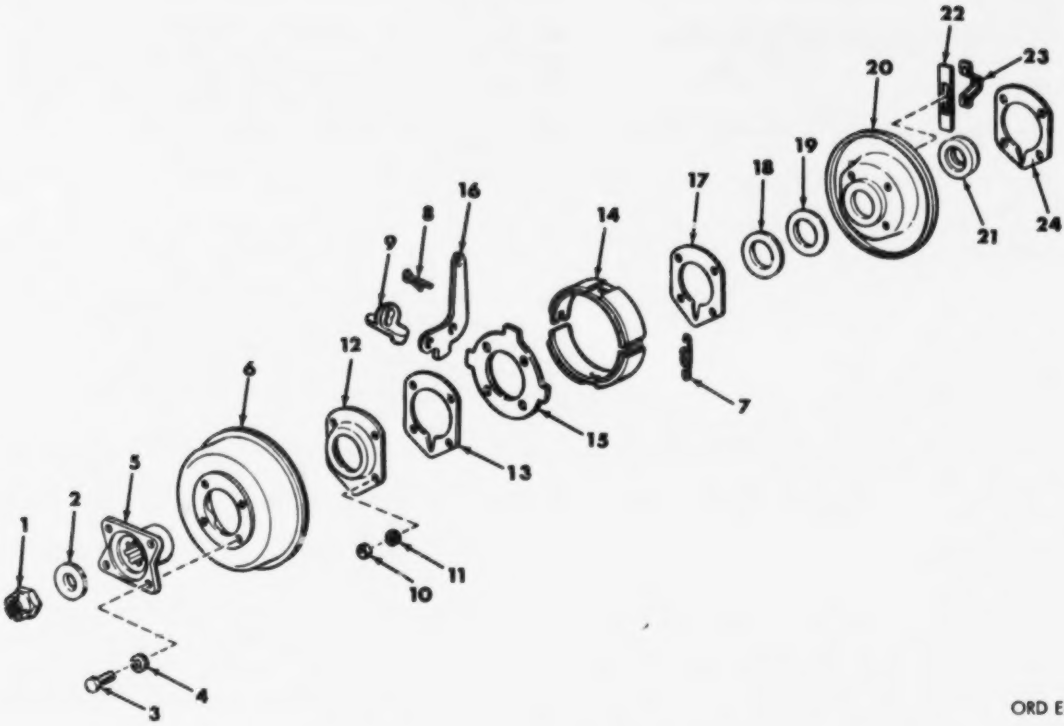
b. Brake Assembly M274A2, M274A4 and M274A5.

Note. **Key numbers shown below refer to figure 5-19.**

(1) Inspect the brakedrum (3) for cracks or distortion. Inspect the inside diameter for wear beyond limits specified in repair standards (par. 5-10).

(2) Inspect splines in drive shaft companion flange (6) for cracks, nicks, burs, or flat spots, and check against limits specified in repair standards (par. 5-10).

(3) Inspect brakeshoe and lining kit (11) for distortion and wear in the plate slots. Inspect lining against limits



ORD E81688

1—3/4 self-locking hex nut—96906-20364-1216A
2—13/16 flat washer—96906-27183-23
3—5/16-24 x 1 hex-head screws (4)—7966811-1
4—5/16-in. split lockwasher (4)—96906-35338-26
5—Drive shaft companion flange—7966699
6—Brakedrum—7966797
7—Brakeband locating spring—7036011
8—3/32 x 1 cotter pin—96906-24665-285
9—Actuating cam—8764604
10—5/16-24 plain hex nut (4)—96906-51968-5
11—5/16 split lockwasher (4)-96906-35338-45
12—Oil, dirt and liquid deflector—7966796
13—Gasket—7966605
14—Brakeband assembly—7018861
15—Support plate—7018864
16—Cam actuating lever—7035922
17—Gasket—70966605
18—Nonmetallic washer—7998708
19—Flat washer—7998707
20—Dirt and liquid deflector—7966795
21—Plain encased seal—7966683
22—Lever hole cover—7045738
23—Spring tension clip—7760078
24—Gasket—7966778

Figure 5-18. Brake assembly—M274A3—exploded view.

specified in repair standards (par. 5-10).

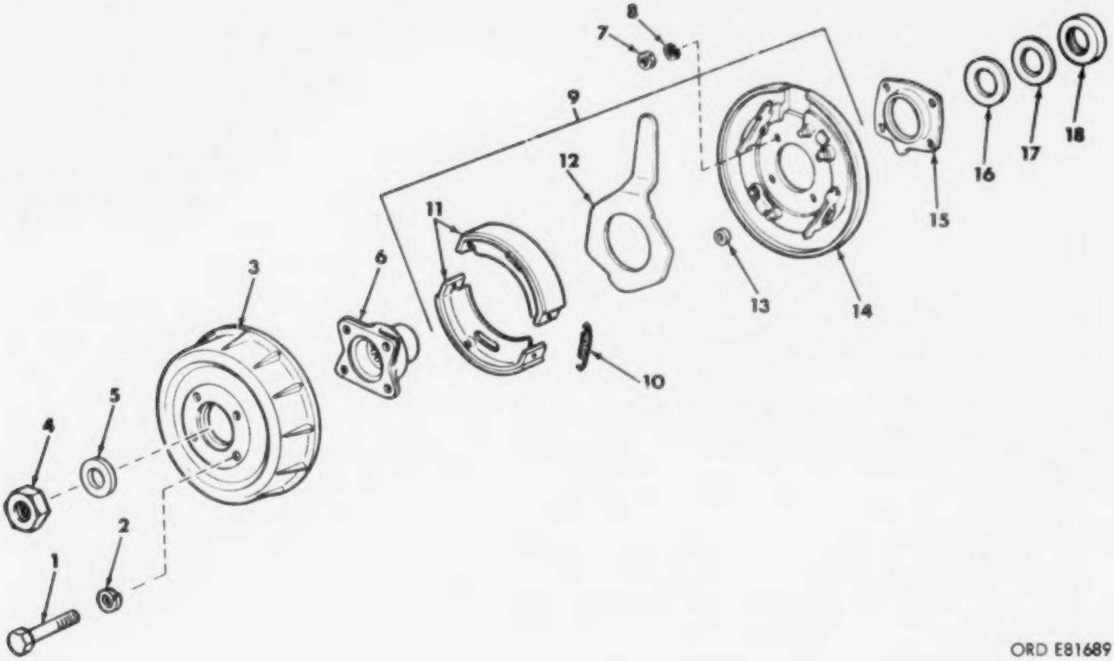
(4) Inspect brake actuating lever (12) and dirt and liquid shield (14) for distortion and cracks. Inspect plate against limits specified in repair standards (par 5-10).

(5) Inspect plain encased seal (18) for wear or breaks in sealing surface. Inspect oil, dirt and liquid shield (15) for cracks. Inspect all parts for cracks or rough edges.

c. Drive Pinion and Associated Parts.

Note. Key numbers shown below refer to figure 5-20.

(1) Inspect shaft of drive pinion (7, fig 5-20) for scoring or signs of discoloration. Inspect gear teeth for



ORD E81689

1—5/16-24 x 1 hex-head screw (4)—7966811-1
2—5/16 split lockwasher (4)—96906-35338-26
3—Brakedrum—11592010
4—3/4-16 self-locking hex nut—96906-20364-1216A
5—13/16 flat washer—96906-27183-23
6—Drive shaft companion flange—11592032
7—5/16-24 plain hex nut (4)—96906-51968-5
8—Split lockwasher (4)—96906-35338-45
9—Brake assembly—10946843
10—Helical extension spring (2)—65909-935989
11—Brakeshoes and lining kit—11592073
12—Brake actuating lever—65909-935990
13—Sleeve spacer (2)—65909-935991
14—Dirt and liquid shield—65909-935979
15—Oil, dirt and liquid shield—11592006
16—Felt washer—11592007
17—Nonmetallic washer—11592008
18—Plain encased seal—7966683

Figure 5-19. Brake assembly and related parts—M274A2, M274A4 and M274A5—exploded view.

chipping or rough spots. Inspect surfaces against limits specified in repair standards (par. 5-10). Inspect machined surfaces and bearing retainer (3) for burs or nicks.

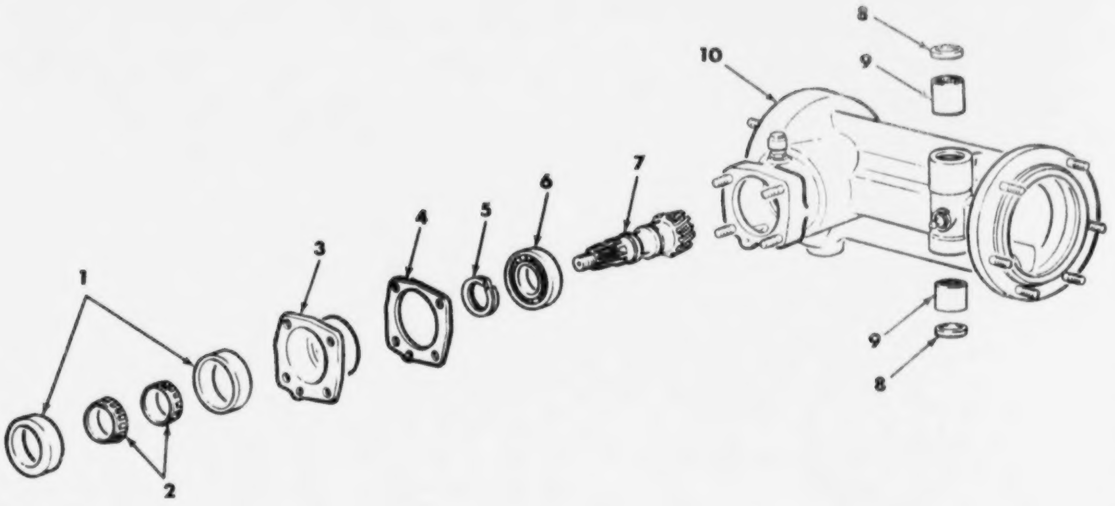
(2) Inspect tapered roller bearing cone and rollers (2) and tapered roller bearing cups (1) and annular ball bearing (6) for galling, wear, scoring or discoloration. Inspect bearing movement for any looseness, roughness or binding. Inspect inside diameter of needle roller bearings (9) against limits specified in repair standards (par. 5-10).

d. Gear Carrier Housing and Associated Parts.

Note. Key numbers shown below refer to figure 5-21.

(1) Inspect machined surfaces of gear carrier (7) for burs or nicks. Inspect outer surfaces for signs of cracks.

(2) Inspect all studs (4, 5 and 6) for damaged threads, bends, or loose fit in carrier housing (7).



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1—Tapered roller bearing cup (2)—7966697	7—Drive pinion—8336218
2—Tapered roller bearing cone and rollers (2)—7966696	8—Plain encased seal (2)—7966727
3—Bearing retainer—7966700	9—Needle roller bearing (2)—96906-17131-26
4—Shim set—5702427	10—Gear carrier housing assembly —7966801 (M274A3 only) —7966801-1
5—Retaining ring—7966701	
6—Annular ball bearing—700080	

Figure 5-20. Gear carrier assembly—partial exploded view.

(3) Inspect plain encased seal (2) for wear or nicks in sealing surfaces.

e. Drop Gear Axle Housing and Gear Bearing Cage.

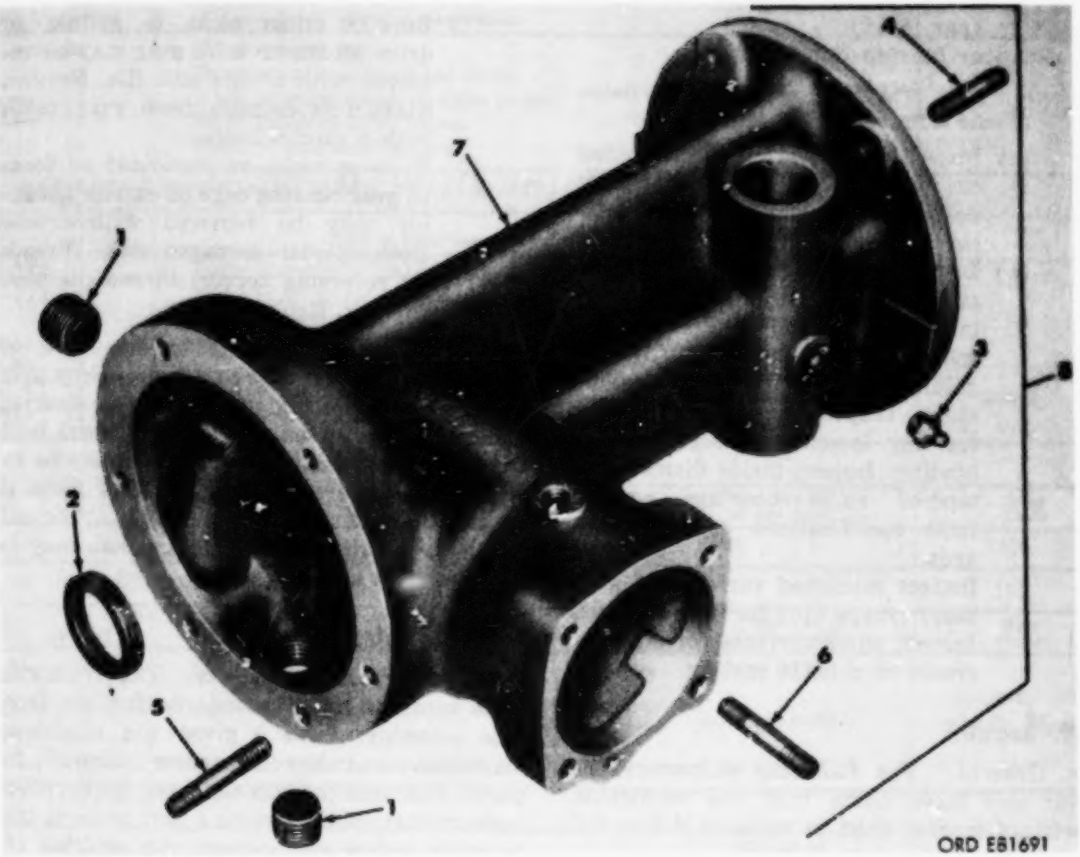
(1) *Front drop gear axle housing assembly.*

Note. The key numbers shown below refer to figure 5-17.

(*a*) Inspect machined surfaces of rear drop gear axle housing (35, fig 5-17) for burs or nicks. Inspect the outer surfaces for signs of cracking. Inspect all studs (33) for damaged threads, bends, or looseness in the housing. Inspect headless straight pins (34, fig 5-17) for bends or looseness in the housing.

(*b*) Inspect annular ball bearings (28), tapered roller bearing cups (15, 18, and 32), and tapered roller bearing cone and rollers (17 and 23) for galling, wear, scoring, or discoloration. Inspect bearing movement for looseness, roughness, or binding. Inspect inside diameter of needle roller bearings (14 and 31) against limits specified in repair standards (par. 5-10).

(*c*) Inspect axle shaft (29), helical driven gear (22, fig. 5-17), and helical idler gear (20), for scoring or signs of discoloration on shaft. Inspect gear teeth and splines for chipping or rough spots. Inspect



1—1/2-14 pipe plug (2)—444667
2—Plain encased seal—7966787
3—1/8-27 straight lubrication fitting—96906-15003-1
4—5/16-18 x 5/16-24 x 1-1/2 lg stud—7966649
5—5/16-18 x 5/16-24 x 1-3/4 lg stud—7966650
6—5/16-18 x 5/16-24 x 1-11/16 lg stud—7966680 (M274A3 only)
stud—11592078 (M274A2, M274A4 and M274A5)
7—Gear carrier—8336158
8—Gear carrier assembly
—7966806 (M274A3 only)
—7966806-1 (M274A2, M274A4 and M274A5)

Figure 5-21. Gear carrier assembly—exploded view.

surfaces against limits specified in repair standards (par. 5-10).

(*d*) Inspect machined surfaces of steering knuckle cover (19), for burs or nicks. Inspect the outer surfaces for signs of cracks.

(*e*) Inspect thrust washers (21), against limits specified in repair standards (par. 5-10). Inspect encased seal (30), for wear or breaks in sealing surfaces.

(*f*) Inspect splines on each end of the universal joint inner and outer shaft (4 and 5), or each end of outer axle shaft (29), against limits specified in repair standards (par. 5-10).

(2) *Gear bearing cage.*

Note. The key numbers shown below refer to figure 5-9.

(*a*) Inspect gear teeth (3) for chipping or rough spots. Inspect surfaces against limit specification in repair standards (par. 5-10).

(*b*) Inspect tapered roller bearing cone and roller (4), tapered roller bearing cup (9), and cone, cup and roller bearing assembly (8) for galling, wear, scoring, or discoloration. Inspect bearing movement for any looseness, roughness, or binding. Inspect inside diameter of tapered roller bearings against limit specifications repair standards.

(*c*) Inspect machined surfaces of gear bearing cage (10) for burs or nicks. Inspect outer surfaces for signs of cracks or chips in casting.

5-9. Repair

a. General. The following subparagraphs cover only those parts that are repairable. Parts not covered must be replaced if they fail to pass inspection (par. 5-8).

b. Brake Assembly. Minor damage to threaded holes in brakedrum may be corrected by the use of a correct size tap. Burs or minor nicks on splines in companion flange may be removed with a fine mill file.

c. Drive Pinion, Gear Bearing Cage, and Associated Parts.

Note. The drive pinion and bevel drive gear are matched sets and must be replaced as a unit.

(1) Burs or minor nicks to splines in drive pinion or drive gear may be removed with a fine mill file. Remove sharp fins or burs from gear teeth with a crocus cloth.

(2) Burs or nicks on machined surfaces of gear bearing cage or carrier assembly may be removed with crocus cloth. Repair damaged stud threads by reversing correct thread die over threads. Replace shims.

d. Drop Gear Axle Assembly. Burs or minor nicks to machined surfaces of drop gear axle housing, steering knuckle cover, steering knuckle, or wheel hub may be removed with crocus cloth. Damaged stud threads may be repaired with a thread chaser. Burs or nicks to splined shafts may be removed with a fine mill file. Sharp fins or burs on gear teeth may be removed with a crocus cloth.

5-10. Repair Standards

a. Front Axle Assembly. The following table contains repair standards for the front axle assembly. Table 4 gives the minimum, maximum, and key clearances allowed for parts. Also included are the wear limits which indicate that point to which a part or parts may be worn before replacement. An asterisk (*) in the "Wear limits" column indicates that a part should be replaced when worn beyond limits given in the "Size and fit of new parts" column. In the "Size and fit of new parts" column, the letter "L" indicates a loose fit (clearance) and the letter "T" indicates a tight fit (interference).

Table 4. Repair Standards

b. Brake Assembly—M274A3.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
5-18	5	Width of spline spaces on companion flange.	0.1535 to 0.1550	*
	5	Seal surface of companion flange.	1.500 to 1.508	1.485
	6	Inside diameter of brakedrum.	5.495 to 5.505	5.625
	16	Bore of cam actuating lever.	0.441 to 0.446	0.451
	9	Dimension of lug on actuating cam.	0.208 to 0.213	0.203
	9	Bore of cam.	0.286 to 0.276	0.291
	15	Dimension of lug on support plate.	0.436 to 0.438	0.431

Table 4. Repair Standards—Continued

b. Brake Assembly-M274A3.—Continued

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
	15-16	Fit of lever on lug.	0.003L to 0.010L	0.020L
	14	Thickness of brakeband and lining.	0.285 to 0.338	0.1665
5-20	7	Width of spline spaces on drive pinion.	0.1535 to 0.1550	•
5-20	7	Fit of flange on drive pinion.	0.0005L to 0.0015L	
5-17	29	Width of axle shaft splines.	0.150 to 0.153	

c. Brake Assembly—M274A2, M274A4, M274A5.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
5-19	3	Inside diameter of brakedrum.	7.245 to 7.255	
5-20	7	Width of spline spaces on companion drive pinion.	0.1535 to 0.1550	•
5-19 5-20	6 7	Fit of flange on pinion drive.	0.0005L to 0.0015L	
5-19	11	Thickness of brakeshoe and lining.	0.285 to 0.338	0.1665
5-19	14	Dimension of lugs on plate.	0.436 to 0.438	

d. Gear Carrier Assembly and Associated Parts.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
5-20	9	Inside diameter of needle roller bearing.	0.875	0.876

e. Gear Bearing Cage.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
5-9	3	Width of spline space in bevel drive gear.	0.154 to 0.156	•
5-9 5-17	11 & 12 29	Fit drive gear splines to axle.	0.001L to 0.005L	•
5-9	11 & 3	Fit of drive gear to bevel pinion gear.	0.004 to 0.007	•

f. Drop Gear Axle Housing.

Fig No.	Ref number	Point of measurement	Size and fit of new parts	Wear limits
5-17	5	Width of splines on outer shaft of universal joint.	0.1630 to 0.1660	•
5-17	1 & 4	Fit of hub on universal joint.	0.001L to 0.003L	•
5-17	4	Width of splines on inner shaft of universal joint.	0.1590 to 0.1620	•
5-17	14 & 31	Inside diameter of roller needle bearings.	0.875	0.876
5-17	29	Inner seal surface on axle shaft.	1.065 to 1.067	1.060
5-17	29	Outer seal surface on axle shaft.	1.123 to 1.130	1.118
5-17	29	Outside diameter of axle shaft.	0.8743 to 0.8750	0.874
5-17	28 & 29	Fit of axle shaft in bearing.	0.0000 to 0.0005	0.002L
5-17	20	Outside diameter of helical idler gearshaft.	0.874 to 0.875	0.8735
5-17	20, 31 & 14	Fit of shaft in bearing.	0.0000 to 0.0005L	0.002L
5-17	21	Thrust washer.	0.052 to 0.054 Must pass between vertical, parallel plates spaced 0.057 by own weight.	
5-17	1	Width of spline spacer on helical driven gear.	0.164 to 0.166	•
5-17	4 & 22	Fit of gear on universal joint.	0.004 to 0.007L	•
5-17 5-24	25, 20 & 22	Backlash with helical drive gear, idler gear, and driven gear.	0.004 to 0.008	•

5-11. Torque Wrench Specifications

Note. The torque wrench specifications for the front axle are the same as those for the rear axle, except as listed below.

Table 5. Torque Wrench Specifications

Fig No.	Ref number	Location	Torque lb ft
5-8	20	Bearing retainer plate to gear carrier.	10-15

Section IV. ASSEMBLY AND INSTALLATION

5-12. General

Assembly and installation procedures are generally the reverse of disassembly and removal, except for use of special tools and procedures.

5-13. Assembly of Drop Gear Axle Housing

a. If headless straight pins (34, fig. 5-17) were removed, press new pins into drop gear axle housing.

b. If 5/16-24 x 5/16-18 x 1-1/4 studs (33, fig. 5-17) were removed, thread new studs into place, allowing 0.750 inch to protrude from housing.

c. If needle roller bearing (31, fig. 5-17) was removed, drive new bearing into place using suitable tools.

d. Refer to paragraph 5-6 and reverse the procedure to install helical drive gear and associated parts.

e. Install encased seal (30, fig. 5-17) in base of housing with lip of seal toward open end of housing, using replacer 5120-601-2225 and handle 5120-601-2234 (fig. 5-22).

Note. Lightly coat the lip of oil seal prior to installing the axle shaft.

f. Refer to paragraph 5-6 and reverse procedure to install axle shaft and associated parts.

g. Press tapered roller bearing and rollers (23, fig. 5-17) on each side of helical driven gear (22, fig. 5-17). Refer to paragraph 5-6 and reverse the sequence of instructions to install the driven gear, helical idler gear (20, fig. 5-17), and associated parts.

h. Check backlash between the helical drive gear, idler gear, and driven gear, with a feeler gage (fig. 5-23). Correct backlash should be from 0.0004 to 0.008 inch between gears. Inspect gage between gear teeth while holding gear in position. If necessary, change idler gear or driven gear to correct backlash.

5-14. Assembly of Gear Carrier Assembly

a. If any studs were removed (par. 5-5), screw new studs into gear carrier.

b. Install plain encased seal (fig. 5-10) in seat in right end of carrier. Lip of seal must be toward open end of carrier.

c. Refer to TM 9-2320-246-20 for installation of the two needle roller bearings and plain encased seals in the bellcrank boss of carrier.

5-15. Assembly of Steering Knuckle Cover

Note. Assembly of outer axle on the M274A5 only, is for the most part the same as the steering knuckle cover (fig 5-17) for all other M274 series vehicles. Any differences in operation will be stated in the paragraphs to follow.

a. If tapered roller bearing cups (18) were removed from outside of steering knuckle cover (19), press new cups into cover bores and set in new tapered roller bearings (17).

b. If tapered roller bearing cup (15) and shims were removed from inside of either cover install same shims (16), and new cup (15) in bore of cover, along with new cones (23).

Note. It may be necessary to adjust shims when checking end play of helical driven gear.

c. If needle roller bearings were removed from the outside of either cover (14, fig. 5-17), install new bearings, using suitable tools.

d. Install steering knuckle cover (fig. 5-17) on drop gear axle housing. Tighten two hexagon head capscrews first (10, fig. 5-17) and then hexagon nuts (8, fig. 5-17) to a torque of 10-to-15 lb. ft.

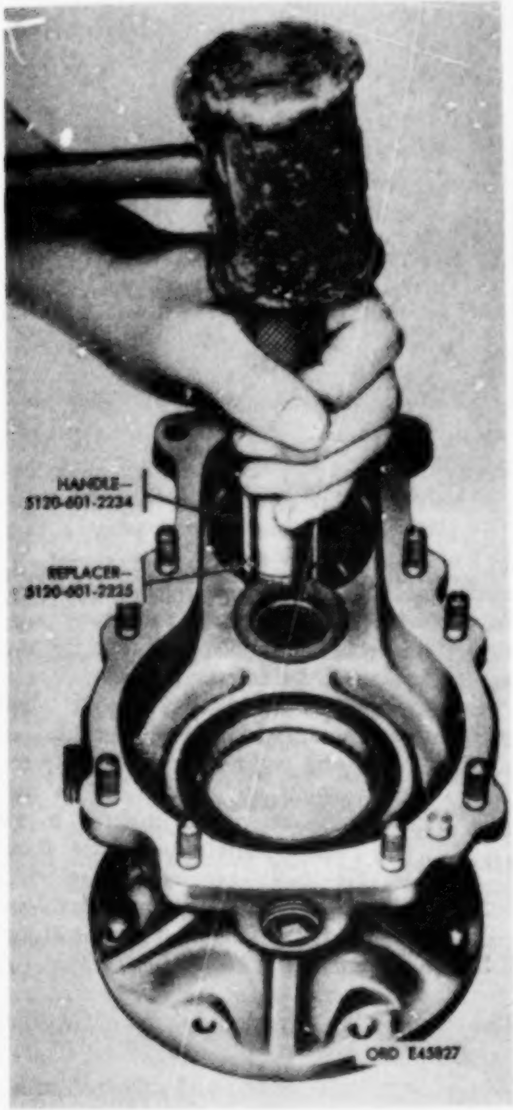


Figure 5-22. Installing encased seal in drop gear axle housing using replacer–5120–601–2225 and handle—5120–601–2234.

5–16. Adjustment of Helical Driven Gear in Drop Gear Axle Housing

a. Turn the axle shaft to make sure the gears and bearings are properly seated.

b. Place dial through universal joint opening (axle shaft cover opening M274A5) with indicator resting against helical drive gear.

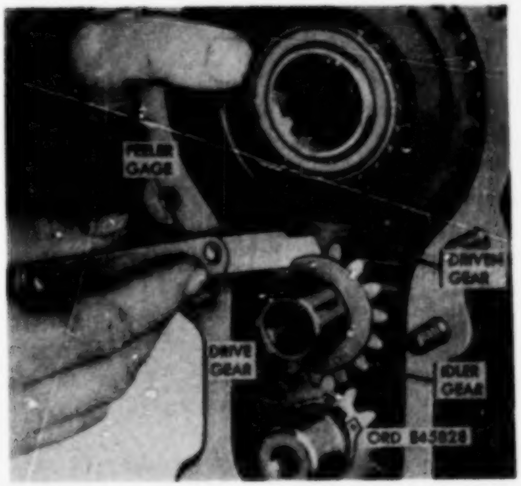


Figure 5-23. Checking backlash between helical drive gear, idler gear, and driven gear.

c. Remove pipe plug from side of axle housing and insert a screwdriver under the driven gear (fig. 5–24).

d. Move gear back and forth, and check dial indicator. The end play of the gear must be 0.001 to 0.003 inch. If end play is not within limits, remove cover and tapered roller bearing cup and add or remove shims as necessary to obtain correct end play.

5–17. Installation and Adjustment of Drive Pinion, Gear Bearing Cage, and Associated Parts

a. General. During assembly and installation of drive pinion and gear bearing cage, five important adjustments must be made to insure correct positioning of these parts. The adjustment points are outlined briefly below and explained in detail in the following subparagraphs. To insure correct adjustment follow the procedure in the order given.

(1) Preload the drive pinion bearings; adjusted by shims (4, fig. 5–20) and checked using scale—6670–347–5922 (fig. 5–26).

(2) Depth of drive pinion in gear carrier housing; adjusted by shims (fig. 5–

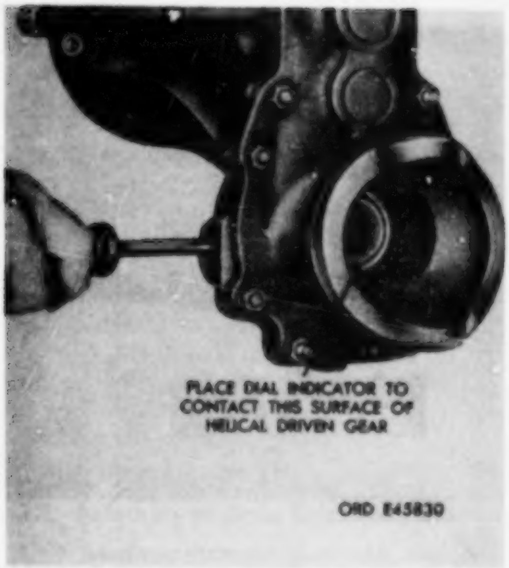

PLACE DIAL INDICATOR TO CONTACT THIS SURFACE OF HELICAL DRIVEN GEAR
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Figure 5-24. Checking helical driven gear end play.

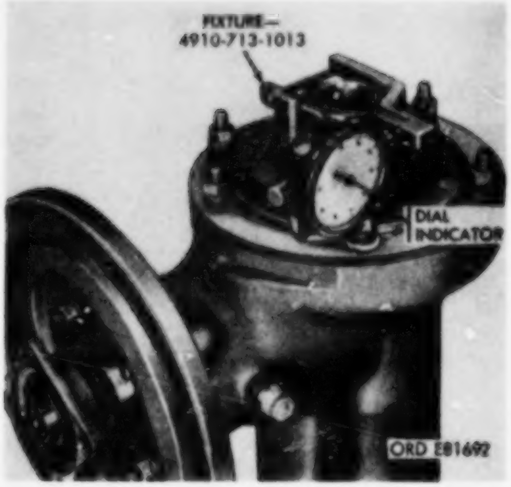


Figure 5-25. Checking backlash between dive pinion and bevel drive gear.

7) and checked using mark on pinion and fixture—4910-713-1015 (fig. 5-28).

(3) Preload of bevel drive gear bearings; adjusted by shim set (5, fig. 5-9) and checked using torque indicating wrench.

(4) Backlash between drive pinion and bevel drive gear; adjusted by shims (fig. 5-9) and checked using fixture —4910-713-1013 (fig. 5-25).

(5) Final adjustment for correct tooth contact between pinion and gear; may require adjustment of shims (fig. 5-9), and checked using red lead test.

b. Assembly of Drive Pinion and Adjustment Preload of Bearings.

(1) Assemble drive pinion, annular ball bearing and retaining ring (fig. 5-7).

(2) Assemble bearing retainer, two tapered roller bearing cones and rollers, and cups (fig. 5-6).

(3) Position assembled drive pinion in assembled bearing retainer (fig 5-8), and install shim set (21, fig 5-8) and bearing retainer plate (20, fig 5-8) against retainer.

(4) Install four 5/16-24 x 1 bolts through holes in retainer, shims, and plate, and secure with four 5/16-inch lockwashers and four 5/16-24 nuts. Place the assembled unit in a vise (fig 5-26). Install companion flange (6, fig 5-8) on splines of drive pinion, and install 3/4-inch flat washer (5, fig 8) and 3/4-inch self-locking nut (4, fig 5-8). Tighten nut finger-tight; turn pinion to seat bearing cups and cones, and tighten the four bolts to a torque of 10-15 lb ft, and the 3/4-inch nut to a torque of 80-100 lb ft. Install scale—6670-347-5922 (fig 5-26) in companion flange bolt hole, and measure pull required to turn flange and pinion. If shim thickness is correct, a pull of 3-5 pounds will be required to turn the pinion in the bearings. If specified pull is not obtained, remove shims to increase the pull and add shims to decrease pull.

(5) Remove the 3/4-inch self-locking nut, 13/16-inch flat washer, companion flange, 5/16-inch nuts, 5/16-

inch lockwashers, and 5/16-24 x 1 bolts. Remove plate and the shim set together for use in final assembly.

c. Installation of Drive Pinion and Adjustment of Depth in Gear Carrier Housing.

(1) The base of the drive pinion contains two markings (fig 5-27). The two figures and letter are for manufacturing use only. The second marking is used in conjunction with the depth-setting fixture (fig 5-28). The pinion in figure 5-27, marked "+2", when combined with the instructions on the fixture plate, will require an 0.018-inch feeler gage for correct depth setting of pinion.

(2) Install drive pinion, annular ball bearing, retaining ring, and shims in gear carrier housing (fig 5-7).

(3) Install shims (21, fig 5-8) and assembled bearing retainer on housing studs (22, fig 5-8). If the drive pinion was not replaced, install same shims removed at disassembly (par 5-5). If a new drive pinion is installed, use a complete set of shims.

(4) Refer to figure 5-8. As established in *b* above, install shims (21); bearing retainer plate (20); gasket (19); plain encased seal (18); felt washer (16); nonmetallic washer (17); oil, dirt and liquid deflector (15), and dirt and liquid deflector (14). Secure with four lockwashers (8) and four plain hexagon nuts (7) on studs, and tighten to a torque of 10-15 lb ft. Install companion flange (6), flat washer (5), and self-locking nut (4) on splines of drive pinion, and tighten nut to a torque of 80-100 lb ft.

(5) Install depth-setting fixture—4910-713-1015 (fig 5-28) on studs on gear bearing cage side of housing. Make sure arm of fixture is against base of drive pinion, and insert correct feeler gage ((1) above) between arm and fixed stud in fixture. Follow procedures on plate of fixture, and add or remove shims between bearing retainer and housing to obtain correct depth setting of pinion. Remove shims to decrease depth and add shims to increase depth.

d. Assembly of Drive Pinion Gear in Gear Bearing Cage and Adjustment of Preload of Bearings.

(1) Refer to figure 5-9 and assemble tapered roller bearing cup (9) and cone, and cup and roller bearing assembly (8) in gear bearing cage (10).

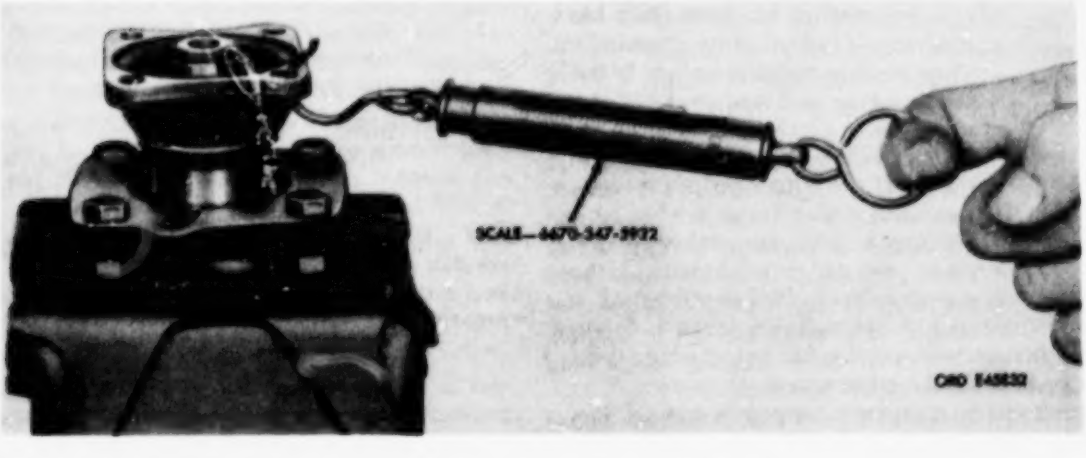


Figure 5-26. Checking preload of drive pinion using scale—6670-347-5922.

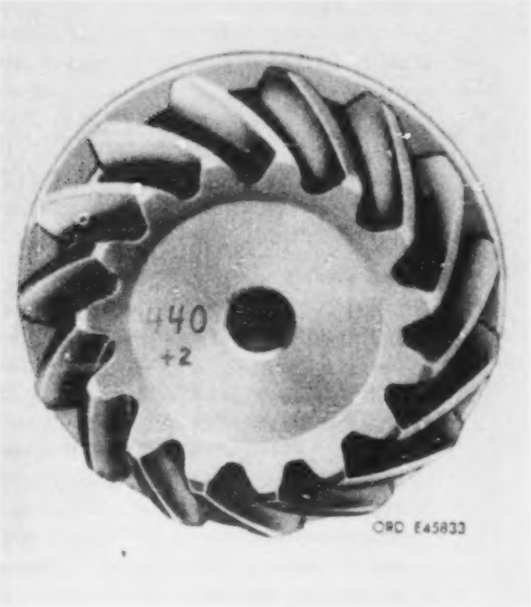


Figure 5-27. Depth-setting mark on drive pinion.

(2) Insert driven gear (3) and sleeve spacer (6) into gear bearing cage assembly (7).

(3) If the drive gear was not replaced, install same shims (5); if a new drive is installed, use a complete set of shims.

(4) Assemble tapered roller bearing cone (4), key washer (2), and plain hexagon nut (1) on driven gearshaft. Turn gear in bearing as nut is being tightened to seat bearings. If shims are correct, a torque of 5-to-15 lb in. will be required to turn the gear in the cage. If adjustment is not correct, remove shims to increase preload and add shims to decrease preload. After correct preload is established, bend the edge of key washer against flat of nut to prevent nut from turning.

e. Installation of Gear Bearing Cage and Adjustment of Gear Backlash.

(1) Refer to figure 5-2. Assemble shims and assembled gear bearing cage on studs in gear carrier housing. If the drive pinion gear was not replaced, install same shims removed at disassembly (fig 5-2). If a new drive gear is installed use a complete set of shims. Temporarily secure cage on studs with six 5/16-inch lockwashers and 5/16-24 hexagon nuts.

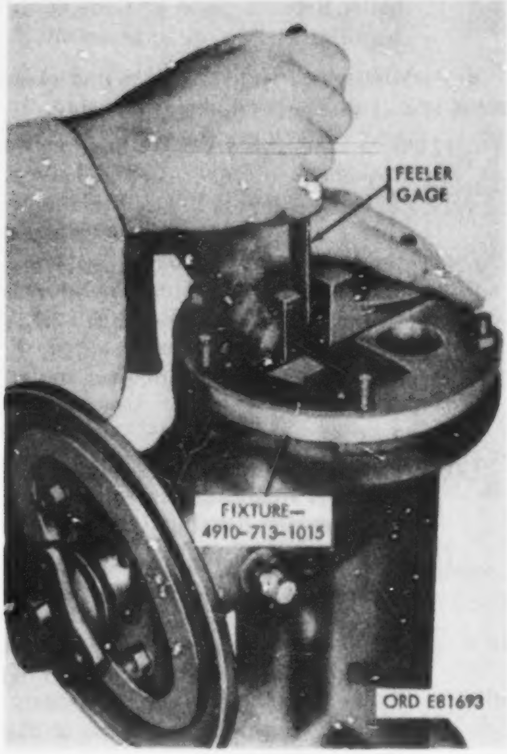


Figure 5-28. Checking depth of drive pinion using fixture—4910-713-1015.

(2) Install backlash setting fixture—4910-713-1013 (fig 5-25) on gear bearing cage nut. Attach a dial indicator to one of the studs in such a position that the indicator plunger will contact fixture between the two lines toward the end of the fixture. Clamp the drive pinion to prevent turning, and turn the drive gear back and forth to determine the backlash as shown by the indicator. The backlash should be from 0.004 to 0.007 inch. If backlash is not within the specified limits, add shims between

cage and housing to increase the reading and remove shims to decrease the reading.

(3) Remove six 5/16-inch lockwashers and 5/16-24 hexagon nuts for assembly of subassembly.

5-18. Determination of Correct Tooth Contact

a. General. When drive pinion and bevel drive gear are installed in operating position they are completely enclosed and cannot be seen. For this reason it is necessary to remove either the bevel drive gear or the drive pinion (preferably the bevel drive gear, fig 5-29) to see the result of a red lead test. As noted in the preceding text, the position of the bevel drive gear is adjusted by changing the thickness of the shims between the gear bearing cage and the transmission housing; the position of the drive pinion is adjusted by changing the thickness of the shims between drive pinion inner bearing retainer and the transmission end cover assembly. In both cases, removing shims moves the unit into closer mesh, and adding shims moves the unit into more open mesh.

Note. Shims used to adjust bearing preload for drive pinion and for gear bearing cage have no effect on tooth contact and should not be changed.

b. Tooth Contact. For the desired tooth contact, as seen on the teeth of the driven gear after a red lead test, refer to 1, figure 5-30. The size of the contact area depends largely on the load applied between the gear and pinion during the test. The greater the load, the larger the area. The location of the contact area is the important point. On the drive, or the convex face of the gear tooth, the contact area should be approximately centered between the top and the bottom of the tooth, and should extend well out toward the toe and the heel of the tooth. However, the area must not extend all the way to either the toe or the heel end. Figure 5-30 shows the five possible tooth contact areas each of which is explained below.

(1) Tooth contact as illustrated in 1, figure 5-30, is satisfactory. The contact area on the drive side of the tooth is well-centered between the top and the bottom of the tooth, starts close to the toe and extends well out to the heel.

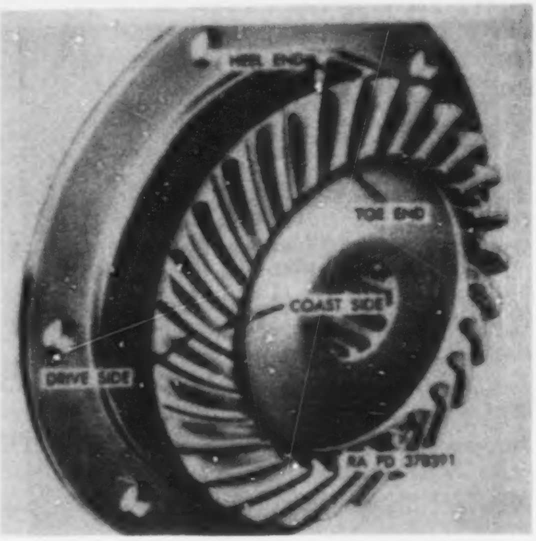


Figure 5-29. Drive gear assembled in gear bearing cage.

(2) Tooth contact as illustrated in 2, figure 5-30, shows a high narrow contact on the drive side of the tooth. This is an undesirable contact and results from the pinion being too far from the gear. To correct, remove shims from between the inner bearing retainer and the transmission end cover assembly, moving the pinion toward the gear. Check backlash, and if necessary add shim between gear bearing cage and transmission housing, moving gear away from pinion.

(3) Tooth contact as illustrated in 3, figure 5-30, shows a low narrow contact on the drive side of the tooth. This undesirable contact results from the pinion being too close to the gear. To correct, add shims between the inner bearing retainer and the transmission end cover assembly, moving pinion away from the gear. Check backlash, and if necessary remove shims from between bearing cage and transmission housing, moving gear toward the pinion.

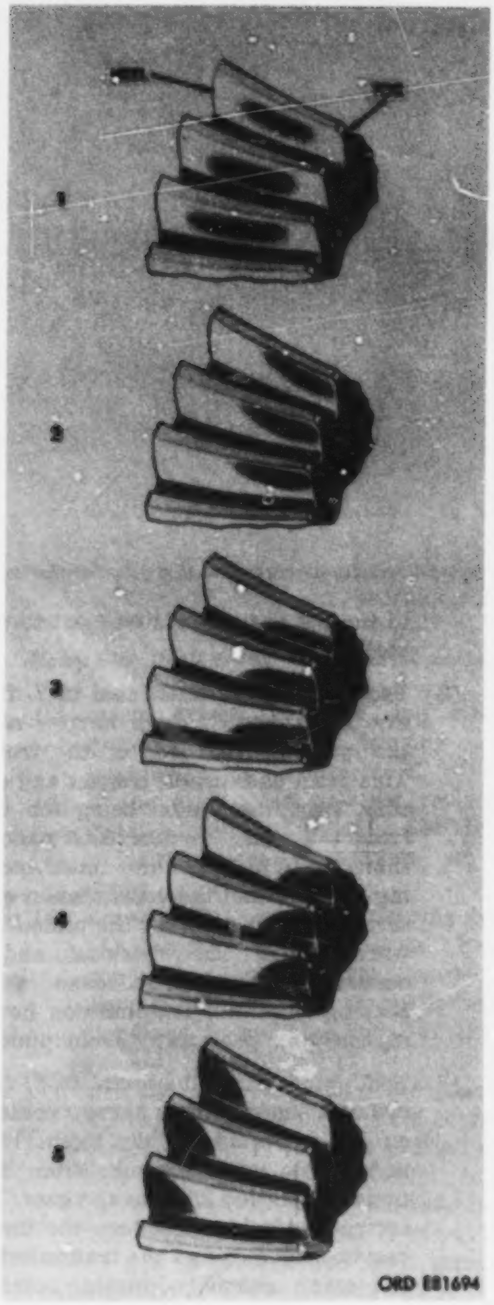


Figure 5-30. Correct and incorrect areas on drive side of the gear teeth.

(4) Tooth contact as illustrated in 4, figure 5-30, shows a short contact at the toe on the drive side of the tooth. This undesirable contact results from the gear being too close to the pinion. To correct, add shims between gear bearing cage and the transmission housing, moving gear away from the pinion. Check backlash, and if necessary remove shims from between bearing retainer and transmission end cover assembly, moving pinion toward the gear.

(5) Tooth contact as illustrated in 5, figure 5-30, shows a short contact at the heel on the drive side of the tooth. This undesirable contact results from the gear being too far from the pinion. To correct, remove shims from between the gear bearing cage and the transmission housing, moving gear toward the pinion. Check backlash, and if necessary add shims between the inner bearing retainer and the transmission end cover assembly, moving pinion away from the gear.

5-19. Assembly of Brake Assembly

a. Installation of Brake Assembly M274A2, M274A4 and M274A5. (Refer to fig 5-8.)

(1) Install shims (21) and bearing retainer plate (20) on studs of the gear carrier subassembly.

(2) Install gasket (19), nonmetallic washer (17), felt washer (16), plain encased seal (18), and install oil, dirt and liquid deflector (15).

(3) Position dirt and liquid deflector (14) on studs, install four lockwashers (8), and four 5/16-inch hexagon nuts (7).

(4) Install spacers (13), brake lever (12), two brakeshoes (11), and extension springs (10).

(5) Position companion flange (6) onto drive pinion shaft, and attach with 13/16-inch flat washer (5) and 3/4-inch self-locking hexagon nut (4).

(6) Install brakedrum (3) using four 5/16 split lockwashers (2) and four

5/16-24 x 1 hexagon-head screws (1).

b. Assembly of Brake Assembly—M274A3. (Refer to fig 5-3.)

(1) Install plain encased seal (21) and cam actuating lever (20) onto dirt and liquid deflector (18).

(2) Install dirt and liquid deflector (18).

(3) Install gasket (15), support plate (14), gasket (13), and oil, dirt and liquid deflector (12).

(4) Install four 5/16-inch lockwashers (11) and four 5/16-inch hexagon nuts (10).

(5) Install actuating cam (9) with cotter pin (19).

(6) Install brakeband assembly (8).

(7) Install band locating spring (7).

(8) Install brakedrum (6) and companion flange (5) on drive pinion shaft, and retain with four 5/16 split lockwashers (4) and four 5/16-24 x 1 plain hexagon head screws (3).

(9) Install 3/4-inch flat washer (2) and 3/4-inch self-locking nut (1).

5-20. Assembly of Subassemblies

Refer to paragraph 5-4*b* and reverse those procedures.

5-21. Installation

Refer to TM 9-2320-246-20 for installation of front axle assembly to vehicle.

CHAPTER 6

REPAIR OF TRANSMISSION AND REAR AXLE ASSEMBLY

Section I. DESCRIPTION AND DATA

6-1. Description and Operation

a. General. The transmission and rear axle assembly (fig 6-1) is mounted directly between the flanges of two frame tube assemblies and two rear support tube assemblies. The assembly consists of three subassemblies: transmission housing assembly and two drop gear axle housing assemblies. The drop gear axle housing assemblies are exactly the same as the corresponding parts of the front axle assembly on all vehicles except the M274A5 vehicle which does not incorporate four-wheel steering components. The transmission (fig 6-2) contains necessary gears, shafts, shift forks, bearings, seals, etc., to transmit power from the clutch-driven disk to the drive pinion in any one of three forward speeds or one reverse, and in either one of two speed-range ratios.

b. Differences Among Models.

(1) *Drop gear assembly.* The lower portion of the drop gear axle housing on the M274A2, M274A4 and M274A5 vehicles is larger than the housing casting on the M274A3 vehicle. In addition, on top of the axle housings of M274A2, M274A4 and M274A5 vehicles, there is a pipe plug in place of the vent assembly on the M274A3 housing. The rear axle on the M274A5 vehicle does not incorporate a steerable axle as on all other M274 series vehicles. The joint assembly is replaced by a solid shaft. The steering knuckle and knuckle cover are replaced by one solid cover.

(2) *Transmission assembly.* The bearing ball and helical compression spring holding the second- and high-speed shift shaft in position have been relocated in the M274A2, M274A4 and M274A5 vehicles' transmission assemblies. These parts now enter the transmission housing from the gear bearing cage side of the shift shaft, and a shifter shaft poppet plug has been added to hold the spring and ball in the housing.

6-2. Data

Type	combined drop gear drive axle and transmission
Lubricant capacity transmission	2 qt
Lubricant capacity axle housing	12 oz ea
Ratio, engine to drive pinion, high gear, high range:	
M274A2, M274A4, M274A5	2.440 to 1
M274A3	2.838 to 1
Ratio, engine to drive pinion, high gear, low range:	
M274A2, M274A4, M274A5	4.560 to 1
M274A3	5.310 to 1
Ratio, input drive pinion to drive gear:	
All M274 series	1.866 to 1
Ration, axle shaft to universal joint	2.200 to 1
Speeds	3 forward and 1 reverse with high and low range synchronized – intermediate and high

M274A2, M274A4, M274A5 at 3,600 rpm engine speed:

	High range	*Low range*
High	25.0 mph	13.2 mph
Intermediate	14.4 mph	7.7 mph
Low and reverse	8.4 mph	4.5 mph

M274A3 at 3,600 rpm engine speed:

	High range	*Low range*
High	25 mph	13 mph
Intermediate	14 mph	7 mph
Low and reverse	8 mph	4 mph

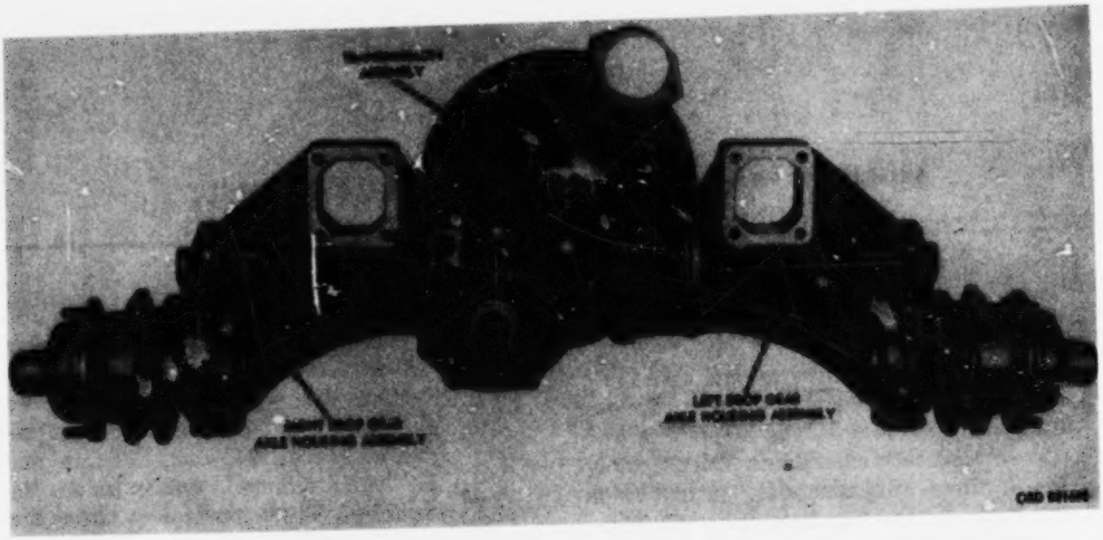
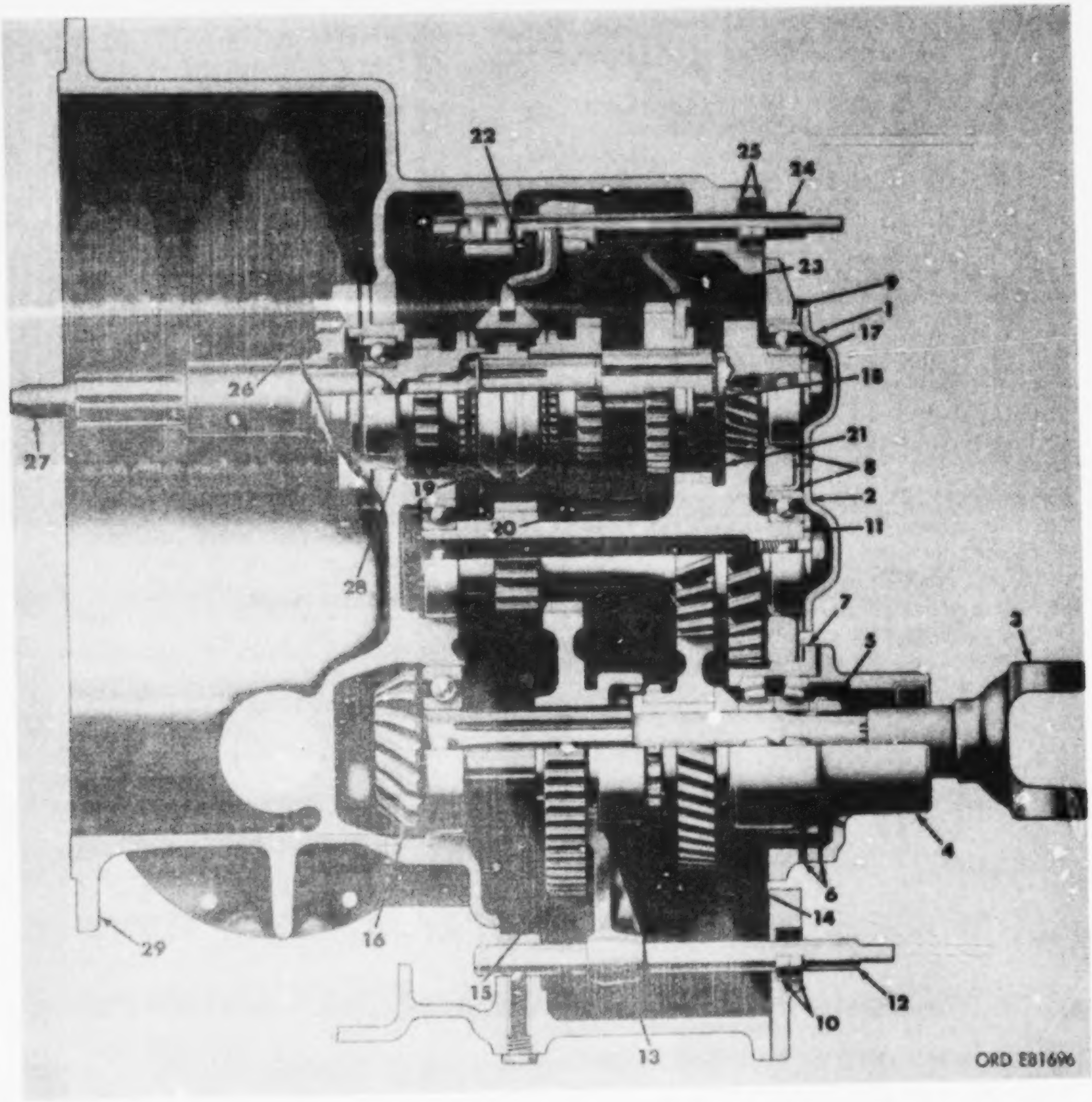

TRANSMISSION ASSEMBLY
RIGHT DROP GEAR AXLE HOUSING ASSEMBLY
LEFT DROP GEAR AXLE HOUSING ASSEMBLY
ORD

Figure 6-1. Transmission and rear axle assembly—front view.


22
25
24
23
9
1
17
18
26
27
21
8
2
19
11
20
28
7
5
3
4
6
14
16
29
15
12
10
13
ORD E81696

1—Bearing retainer, outer—7966695
2—Bearing retainer, outer—7966695
3—Propeller shaft yoke—7966735
4—Bearing retainer—7966694
5—Plain hexagon nut—7966714
6—Adjusting shims—5702427
7—Bearing retainer, inner—7966690
8—Bearing retainer, inner(2)—7966708
9—End cover
—7966646 (M274A3 and M274A4)
—10945117 (M274A2 and M274A5)
10—Plain encased seals—7966631
11—Bevel spur gearshaft—11592021
12—Gear shift shaft—7966629
13—Range shift fork—7966673
14—High-speed spur gears—7966667
15—Low-speed spur gears—7966666
16—Drive pinion—8336247

Figure 6-2. Transmission assembly—cross-sectional view.

17—Helical gearshaft—10946869
18—First and reverse spur gear—7966711
19—Synchronizer assembly—8686932
20—Countershaft cluster gear—7966635
21—Reverse idler spur gear—7966636
22—Second- and high-speed gear shift fork—8687099
23—First and reverse gear shift fork—.966672
24—Gear shift shafts—11592020—7966628
25—Plain encased seals—7966631
26—Bearing retainer, outer—11592019
27—Input spur gearshaft—11592077
28—Bearing retainer, inner—7760062
29—Rear axle and transmission housing
—7966802 (M274A3)
—10945101 (M274A2 and M274A4)
—10945101-2 (M274A5)

Figure 6-2—Continued.

Section II. REPLACEMENT OF SHIFT SHAFT ENCASED SEALS

6-3. General

The ends of the range shift shaft, first and reverse gear shift shaft, and second- and high-speed gear shift shaft project from the front of the axle and transmission housing end cover. Each shaft is equipped with two plain encased seals to prevent the entrance of water or road dirt in the housing. As replacement of these seals may be necessary before the axle and transmission assembly has to be removed, three special tools are provided to replace the seals while the assembly is installed in the vehicle. Their use is described in paragraphs 6-4 and 6-5.

6-4. Removal of Shift Shaft Encased Seals

a. Removal of Transmission Linkage. To disconnect transmission linkage remove three cotter pins and clevis pins connecting control rod rigid linkages to ends of shafts, and move linkages to side of shafts.

b. Removal of Encased Seals.

(1) Position puller screw 7010310 over shift shaft and screw taper-threaded end into seal (fig 6-3).

(2) Position puller body 7010311 (fig 6-4) over puller screw 7010310. Screw on puller nut 176050 which will pull plain encased seal out into puller body 7010311.

c. Removal of Shift Shaft Seals. The other two shift shaft plain encased seals are pulled in the same manner.

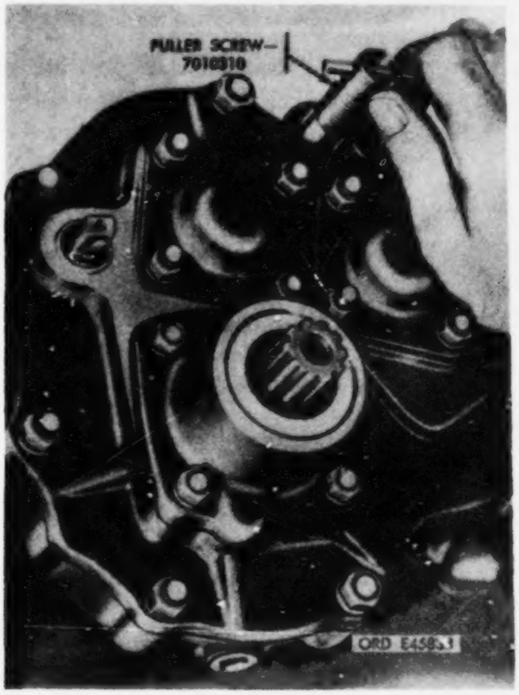


Figure 6-3. Screwing puller screw into plain encased

6-5. Installation of Shift Shaft Encased Seals

a. Installing Plain Encased Seals. Position first plain encased seal, lip end in, on shift shaft, being careful not to injure lip of seal. Position second seal on shaft, lip end out. Position replacer 5120-601-2229 on shaft against outer face of seal, and carefully drive both seals into axle and transmission housing (fig 6-5).

b. Installing Encased Seals. Shift shaft seals are installed on two other shafts in the same manner.

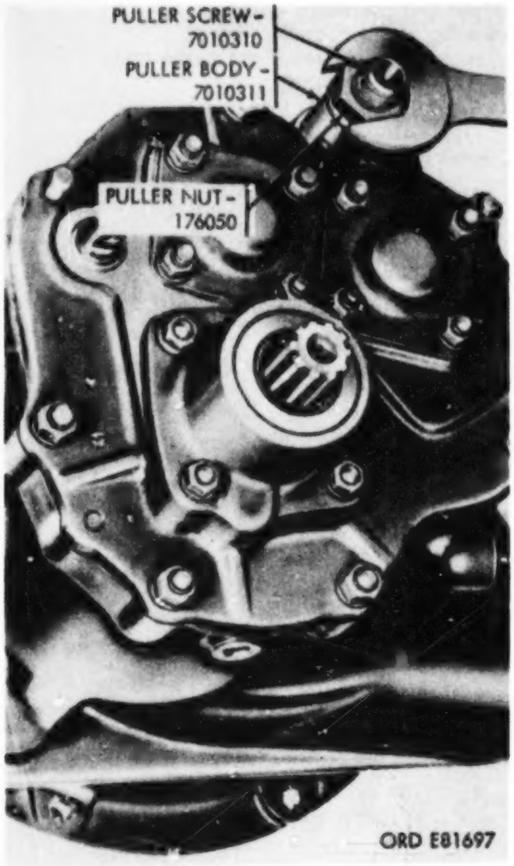

PULLER SCREW-
7010310
PULLER BODY-
7010311
PULLER NUT-
176050
ORD E81697

Figure 6-4. Removing plain encased seal from shift 2227.

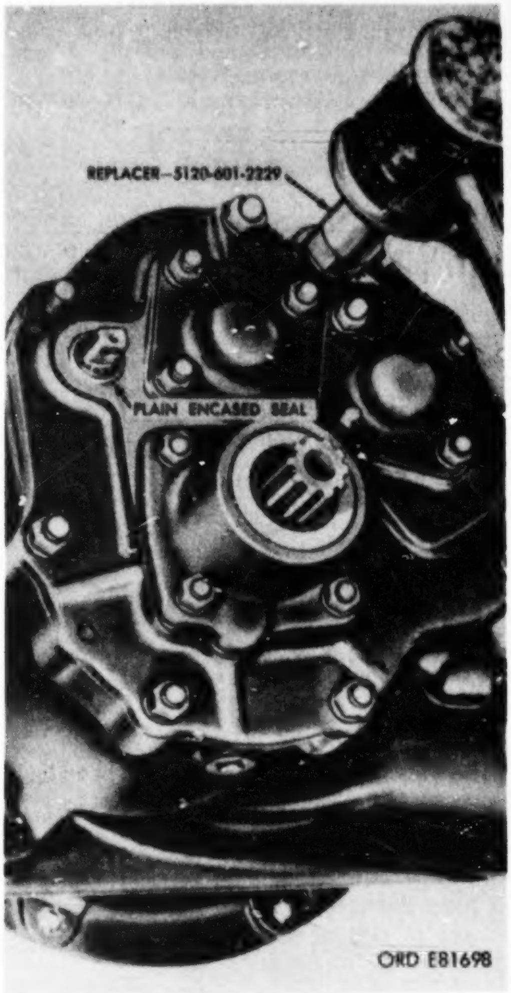

REPLACER–5120-601-2229
PLAIN ENCASED SEAL
ORD E81698

Figure 6-5. Installing plain encased seals for shift shaft 2229.

Section III. REMOVAL AND DISASSEMBLY

6-6. General

a. Instructions and illustrations in the following paragraphs describe the removal and disassembly of the components of the transmission and rear axle assembly.

b. The exploded views in this chapter provide visual reference to components of the transmission and rear axle assembly, and parts identification.

c. Discard all gaskets and packings during disassembly and replace with new ones at assembly.

6–7. Removal

Refer to TM 9-2320-246-20 for removal of transmission and rear axle assembly.

6–8. Disassembly of Transmission and Rear Axle Assembly into Subassemblies

a. Remove three drain plugs, and drain lubricant from right and left drop gear axle housings and transmission assembly (fig 6–6).

b. Remove six 5/16-inch hexagon nuts and six 5/16-inch lockwashers from each flanged end of gear carrier assembly, and carefully pull right and left drop gear axle housing with attached parts from transmission housing studs (fig 6–6).

c. Remove and discard gasket between right drop gear axle housing and transmission housing (fig 6–6).

6–9. Disassembly of Drop Gear Axle Housing and Gear Bearing Cage

a. Drop Gear Axle Housing Assembly.

(1) *General.* Refer to paragraph 5–6 for disassembly procedure of drop gear axle housing (for M274A2, M274A3 and M274A5).

(2) *Removal and disassembly of drop gear axle cover assembly (M274A5 only).*

Note. Complete disassembly of cover is not necessary unless inspection indicates damage to needle bearing seal, shaft, or roller bearing.

(*a*) Using a suitable seal puller, remove plain encased seal (10, fig 6–7). Also remove retaining ring (4), bearing (6), gearshaft (7), and sleeve bearing (5).

(*b*) Remove two 5/16-inch machine bolts (10) and 5/16-inch lockwashers (11) from top of drop gear axle housing (fig 5–17). Remove eight 5/16-inch plain hexagon nuts (1) and 5/16-inch lockwashers (2) from sides and bottom of housing (fig 6–7).

(*c*) Pull drop gear axle cover (11) from axle housing studs and remove cover gasket (3).

(*d*) Drive needle bearings (9) out of cover from the inside. Expansion plugs (8, fig 6–7) will come out at the same time.

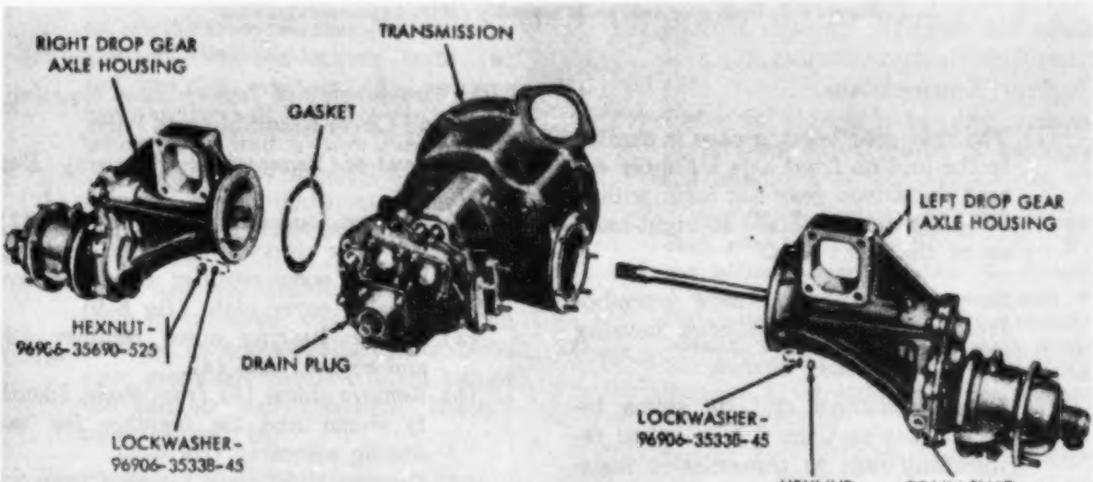
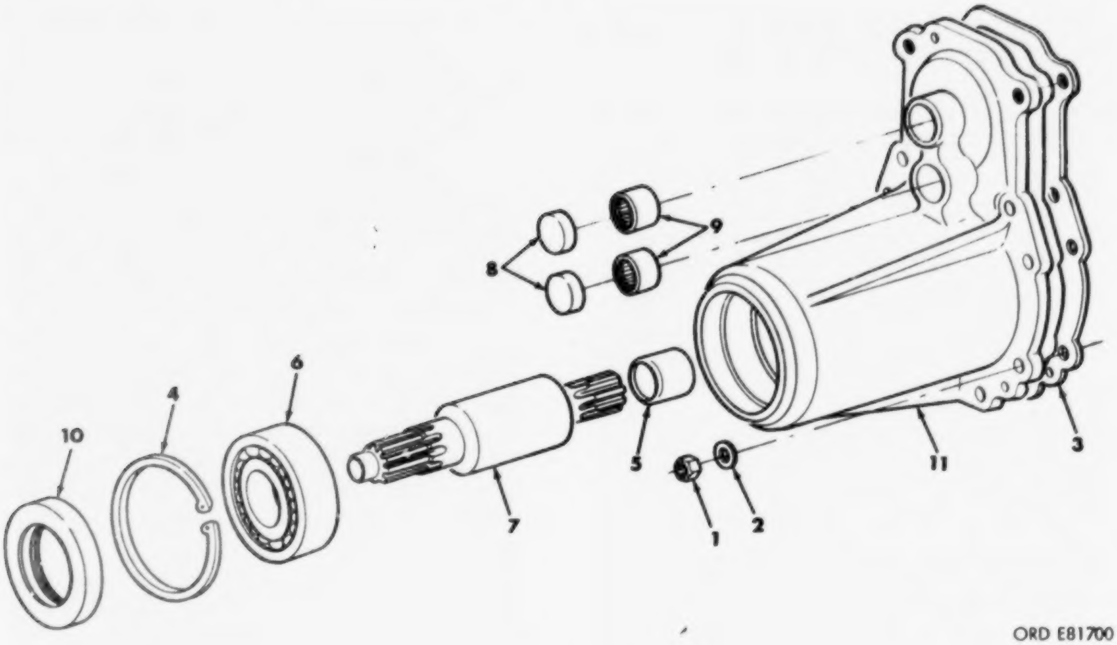

RIGHT DROP GEAR AXLE HOUSING
TRANSMISSION
GASKET
LEFT DROP GEAR AXLE HOUSING
HEXNUT-96906-35690-525
DRAIN PLUG
LOCKWASHER-96906-35338-45
LOCKWASHER-96906-35338-45
HEXNUT-96906-35690-525
DRAIN PLUG
ORD E81699

Figure 6–6. Removing or installing drop gear axle housing with attached parts.



ORD E81700

1—Plain hex nut—96906-35690-525
2—Lockwasher—96906-35337-26
3—Gasket—7966597
4—Retaining ring—10946839
5—Sleeve bearing—7966792
6—Bearing—714249
7—Gearshaft—11592091
8—Expansion plug—8336138
9—Roller needle bearing—713759
10—Seal, encased—11592092
11—Cover—11592090

Figure 6-7. Drop gear axle cover assembly (M274A5)—exploded view.

b. Gear Bearing Cage.

(1) The rear gear bearing cage is similar to the unit on front axle assembly except the driven gear has teeth with a left-hand spiral instead of right-hand as on the front axle.

(2) Remove gear bearing cage assembly from studs of transmission housing (fig 6-8).

(3) Remove, identify, and tie shims together, saving them for use when reinstalling cage to transmission housing.

(4) Refer to paragraph 5-5*d* for disassembly procedure of the gear bearing cage and attaching parts (fig 5-9).

6-10. Disassembly of Transmission Housing End Cover Assembly and Parts

a. Removal of Transmission Housing End Cover.

(1) Remove four plain hexagon nuts (1) and four lockwashers (2) securing bearing outer retainer (3) to transmission cover plate (fig 6-9).

(2) Remove bearing outer retainer (3) and encased seal (4).

(3) Remove shims (5) from studs. Identify shims and tie together for use during assembly (fig 6-9).

(4) Remove eight plain hexagon nuts (6) and eight lockwashers (7) securing two bearing outer retainers (8) and two gaskets (9) to transmission cover plate.

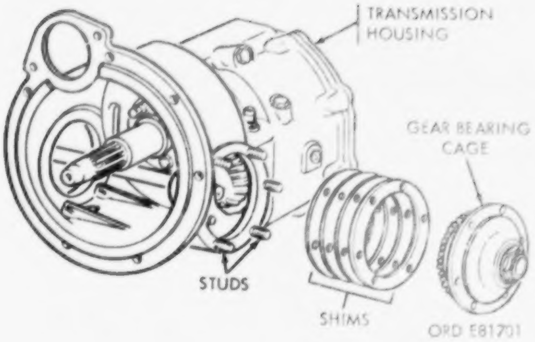


Figure 6–8. Removing or installing gear bearing cage mission housing.

(5) **Remove two** bearing outer retainers **(8) and discard** two gaskets (9).

(6) **Remove plain** hexagon nut (1, fig 6–**10) from drive** pinion, using socket **wrench 5120–601–**2224 (fig 6–11).

(7) **Remove key** washer (2) and flat **washer (3). Rem**ove bearing inner **retainer (4, fig 6–**10).

(8) **Remove shims (5)** from studs. Identify shims and tie together for use **during** assembly.

(9) **Remove two tapered** bearing cups (6) **and two tapered** bearing cones and **rollers (7) from retain**er (4).

(10) **Remove two self-**locking bolts (8) **and two flat washer**s (9) securing **two annular ball bear**ings (16) to re**tainer (14), and to** the transmission **cover plate (12)** studs.

(11) **Remove seven plain hexagon** nuts **(10) and seven lock**washers (11) se**curing cover plate** (12) to transmis**sion housing.** Carefully lift cover **plate from studs** while tapping on **ends of helical gear**shaft and bevel **spur gearshaft to** drive them out of **the annular ball** bearings. Discard **cover gasket (13).**

b. Disassembly of Transmission Housing End Cover.

(1) **Remove two bearing** inner retainers **(14) and two gask**ets (15) from **cover (fig 6–10), and dis**card gaskets.

(2) Remove annular ball bearings (16) from each retainer (14). Remove two encased seals (17) from transmission end cover (12).

Note. Do not remove studs unless inspection indicates replacement is necessary.

6–11. Disassembly of Transmission Gears and Related Parts

a. Removal of Bevel Spur Gearshaft and Related Parts.

(1) Remove bevel spur gearshaft (1) with annular ball bearing (fig 6–12).

(2) Remove annular ball bearing from bevel spur gear gearshaft using an arbor press and suitable adapter (fig 6–13).

(3) Remove shift shaft poppet plug (2), helical compression spring (3), and bearing ball (4) from transmission housing (fig 6–12).

b. Removal of Drive Pinion Range Shift Shaft and Related Parts (fig 6–12).

(1) Remove drive pinion (5) with related parts and range shift shaft (6) with shift fork (9).

(2) Remove lockwire (7) from setscrew (8) on shift fork (9).

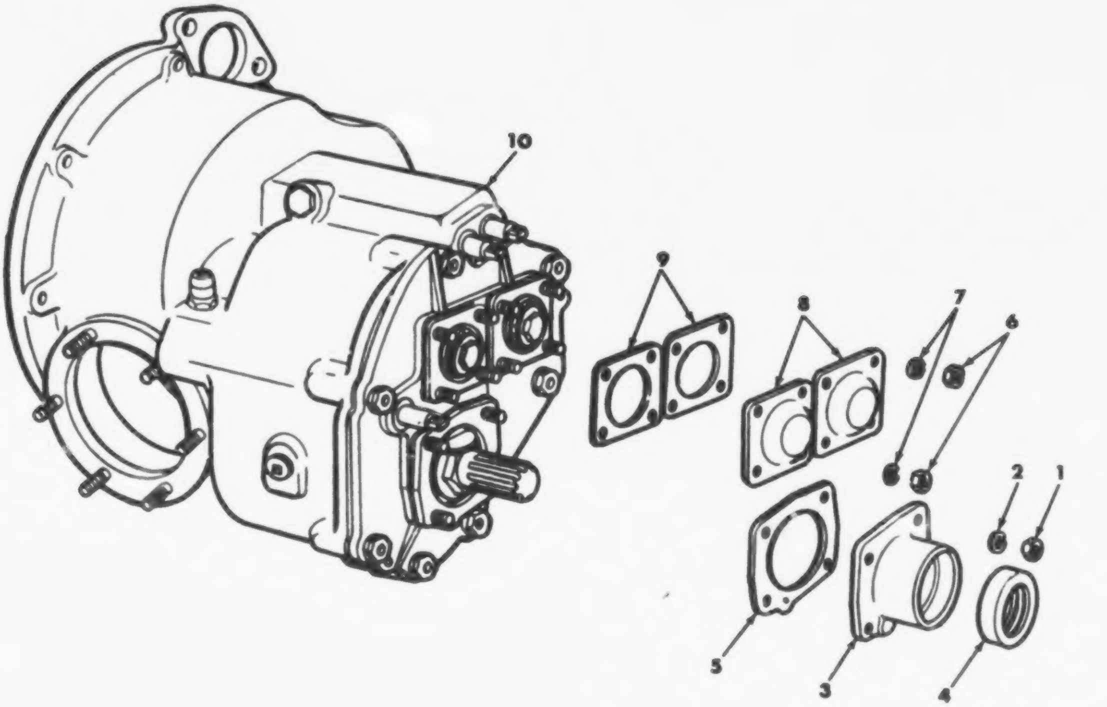
(3) Remove setscrew (8) from shift shaft fork (9), and slide fork off shift shaft (6).

(4) Refer to figure 6–14 and remove parts from drive pinion is sequence suggested.

Note. The lower end of the helical gearshaft rides in roller needle bearings in the end of input spur gearshaft. To prevent damage to these bearings, and because of the limited clearance in the transmission housing, the input spur gearshaft should be partially removed from the housing. Refer to figure 6–15 for location of input spur gearshaft.

(5) Loosen four 5/16-inch plain hexagon nuts securing input spur gearshaft bearing retainer. Refer to figure 6–15.

(6) Pull spur gearshaft and bearing retainer partially out of housing.



ORD E81702

1—5/16-24 plain hex nut (4)—96906-51968-5
2—5/16 split lockwasher (4)—96906-35338-45
3—Bearing retainer, outer—7966694
4—Encased seal—7966691
5—Shims—5702427
6—5/16-24 plain hex nut (8)—96906-51968-5
7—5/16 split lockwasher (8)—96906-35338-45
8—Bearing retainer, outer (2)—7966695
9—Gasket (2)—7966599
10—Transmission subassembly—NPN

Figure 6-9. Removing or installing bearing outer retainer—exploded view.

(7) Remove shift shaft poppet plug, helical compression spring, and bearing ball securing first and reverse gear shift shaft (fig 6-16).

c. Removal of Helical Gearshaft and Related Parts.

(1) Remove locking wire and setscrew from second- and high-speed gear shift shaft fork (fig 6-17).

(2) Remove helical gearshaft and related parts by pulling first and reverse gearshift partially from housing. Lift gearshaft out of needle bearings in end of input spur gearshaft; swing gear toward center and remove from housing. Refer to figure 6-17 for location of parts.

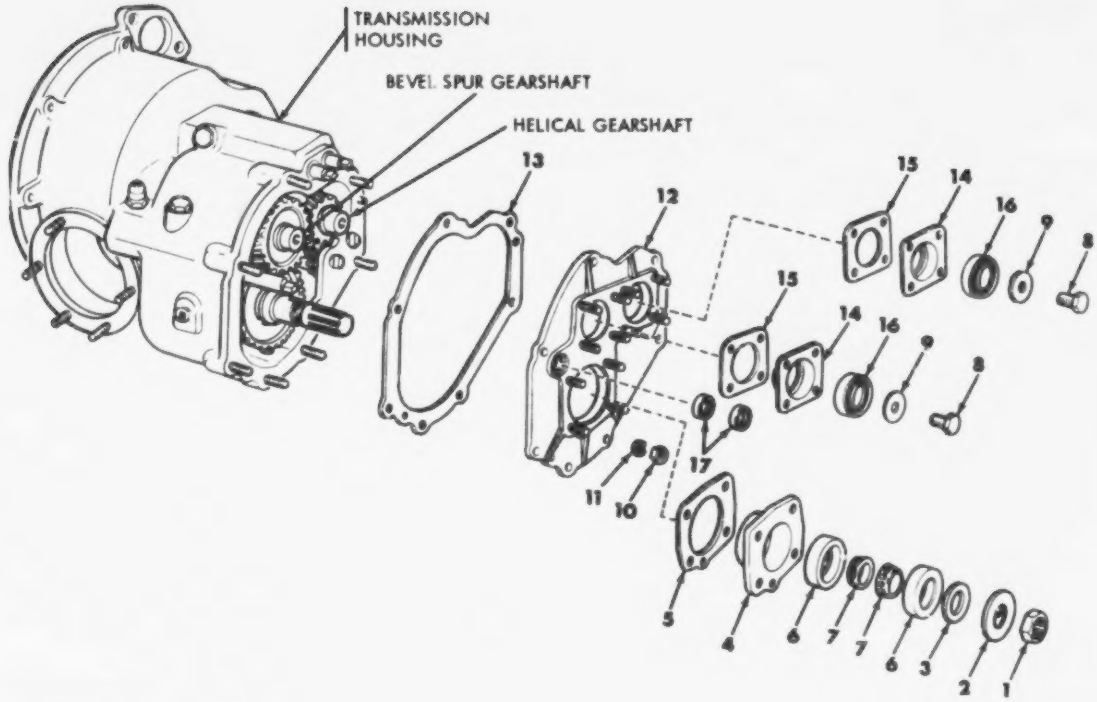
Note. Do not remove bushing-type bearing from second-speed spur unless inspection indicates replacement is necessary.

(3) Remove retaining ring (fig 6-18).

(4) Slide synchronizer assembly, second-speed spur gear, and first- and reverse-speed spur gear (fig 6-18) from helical gearshaft.

d. Removal of First and Reverse Gear Shift Shaft. Refer to figure 6-19 and remove first and reverse gear shift shaft in sequence listed below:

(1) Remove poppet plug (1), helical spring (2), and bearing ball (3, fig 6-19).



ORD E81703

1—Hex nut—7966714
2—Key washer—7966803
3—Flat washer—7966693
4—Bearing retainer—7966690
5—Shim set—5702427
6—Bearing race—706799
7—Tapered roller bearing—7966696
8—Hex-head screw—8764610
9—Flat washer—8764611
10—3/8-24 plain hex nut (7)—96906-35690-625
11—3/8 split lockwasher (7)—96906-35338-46
12—Transmission end cover
—7966646 (M274A3 and M274A4)
—10945117 (M274A2 and M274A5)
13—Gasket
—7966598 (M274A3 and M274A4)
—10945118 (M274A2 and M274A5)
14—Bearing retainer (2)—7966708
15—Gasket (2)—7966599
16—Ball bearing (2)—700078
17—Encased seals (2)—7066631

Figure 6-10. Transmission end cover and associated parts—exploded view.

(2) Remove setscrew (4, fig 6-19) from first and reverse gear shift shaft fork (6) while in transmission housing.

(3) Remove first and reverse gear shift shaft (5) from housing.

(4) Remove first and reverse gear shift shaft fork (6) from housing.

e. Removal of Second- and High-Speed Gear Shift Shaft. Refer to figure 6-19 and remove second- and high-speed gear shift shaft in sequence listed below:

(1) Remove poppet plug (7), helical spring (8), and bearing ball (9, fig 6-19) from housing.

(2) Remove setscrew (10) from second- and high-speed gear shift shaft fork (fig 6-19) while in transmission housing.

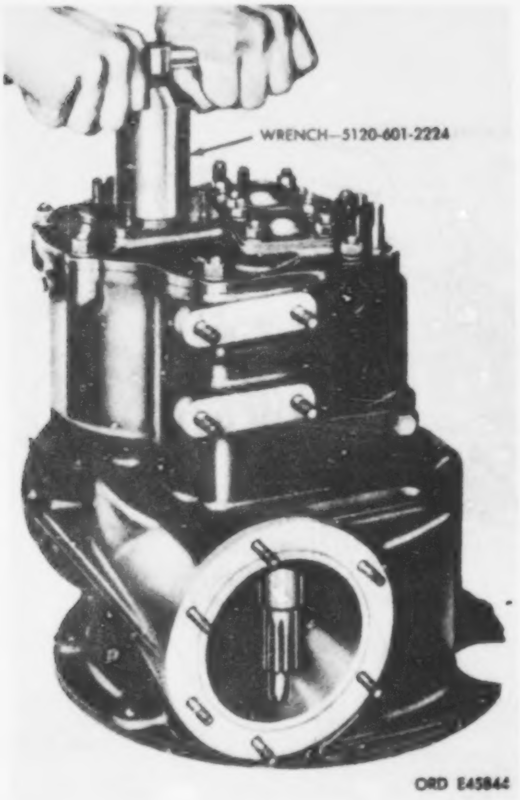


Figure 6-11. Removing or installing hex nut using socket wrench 5120-601-2224.

(3) Remove second- and high-speed shift shaft (11) from housing (fig 6-19).

(4) Remove second- and high-speed gear shift shaft fork (12) from housing (fig 6-19).

f. Disassembly of Synchronizer Assembly (fig 6-20). Refer to figure 6-20 and disassemble synchronizer in sequence listed below.

Note. Disassembly and reassembly of the synchronizer assembly should be accomplished only when minor repair can be accomplished, to bring parts back to a usable condition. There are no stocked parts within the synchronizer.

(1) Remove two blocking rings, one from each end of hub.

(2) Push hub out of clutch sleeve.

(3) Remove three shift plates and two poppet springs from hub.

g. Removal of Countershaft Cluster Gear. Refer to figure 6-19 and remove countershaft cluster gear in sequence listed below:

(1) Drive cluster gear countershaft (13) from transmission housing (fig 6-19).

(2) Remove cluster gear (14) from housing.

(3) Remove thrust washer (15) on each end of cluster gear.

(4) If inspection indicates replacement is necessary, remove bushing-type bearing (16) from each end of cluster gear (fig 6-19).

h. Removal of Reverse Idler Spur Gear. Refer to figure 6-19 and remove reverse idler spur gear in sequence listed below:

(1) Drive reverse idler spur gearshaft (17) from transmission housing (fig 6-19).

(2) Remove reverse idler spur gear (18).

(3) Remove thrust washers (19) from idler spur gear (fig 6-19).

(4) If inspection indicates replacement is necessary, remove bushing-type bearing (20, fig 6-19).

i. Removal of Input Spur Gearshaft. Refer to figures 6-12 and 6-15, and remove input spur gearshaft in sequence listed below:

(1) Remove four plain hexagon nuts (10) and lockwashers (11) loosened in prior operation (fig 6-12).

(2) Remove input spur gearshaft with outer bearing retainer and related parts.

(3) Remove and discard gasket (12).

(4) Remove outer bearing retainer (13).

(5) Remove and discard second gasket (14).

(6) Remove two plain encased seals (15) from retainer.

(7) Remove retaining ring (16).

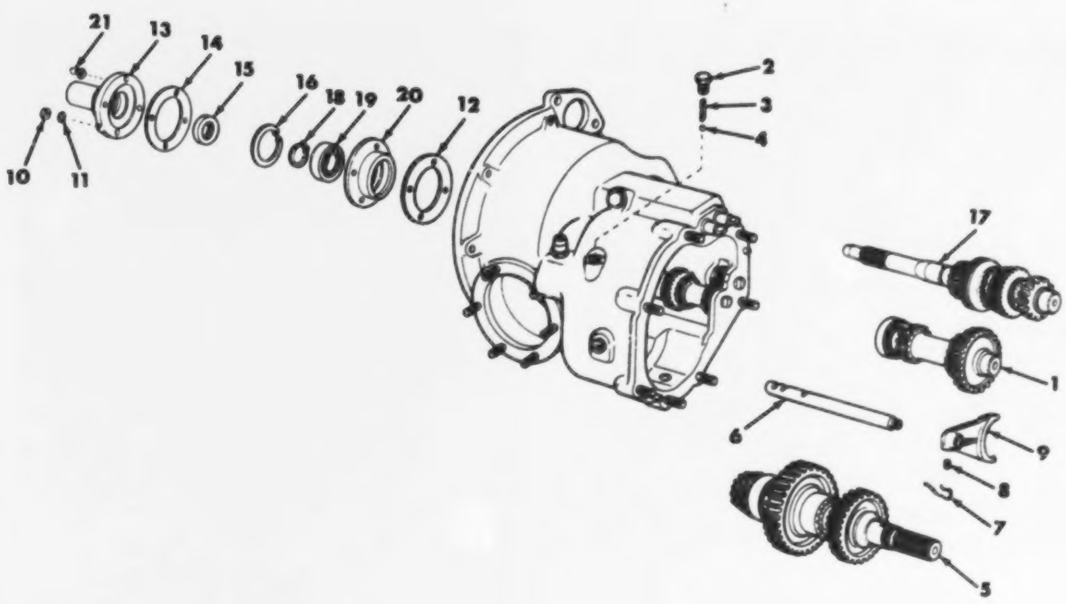
(8) Remove input spur gearshaft (17).

(9) Remove retaining ring (18).

(10) Remove annular ball bearing (19).

(11) Remove inner bearing retainer (20).

Note. Do not remove roller needle bearing from end of gearshaft unless inspection indicates replacement is necessary.



ORD E81704

1—Bevel spur gearshaft
—11592021
—796668 (M274A3 only)
2—Shift shaft poppet plug—7696481
3—Helical compression spring—7089670
4—Bearing ball—145629
5—Drive pinion assembly—NPN
6—Shift shaft—7966629
7—Lockwire—NPN
8—1/4-28 x 1/2 setscrew—7966632
9—Shift shaft fork—7966673
10—5/16-24 hex nut (4)—96906-35690-525
11—5/16 lockwasher (4)—96906-35338-45
12—Gasket—7966596
13—Bearing retainer (front input shaft)
—11592019
—7760063 (M274A3 only)
14—Gasket—7966596
15—Plain encased seals (2)
—10946841
—8748919 (M274A3 only)
16—Retaining ring—7966658
17—Input shaft assembly—NPN
18—Retaining ring—8687011
19—Ball bearing—700078
20—Bearing retainer, inner—7760062
21—Fulcrum—7055683

Figure 6–12. Removing or installing transmission gear assembly—exploded view.

j. Disassembly of Remainder of Transmission Housing. Refer to figure 6–21 and disassemble transmission housing in sequence listed below:

(1) Remove plain encased seal (1) from inside transmission housing.

(2) Remove four plain encased seals (2) from top of housing.

(3) Remove shift shaft poppet bushing (3) using suitable hooked tool.

(4) Remove dowel pin (4) from rear flange of transmission.

(5) Remove oil filler plug (5) and vent assembly (6) from side of transmission.

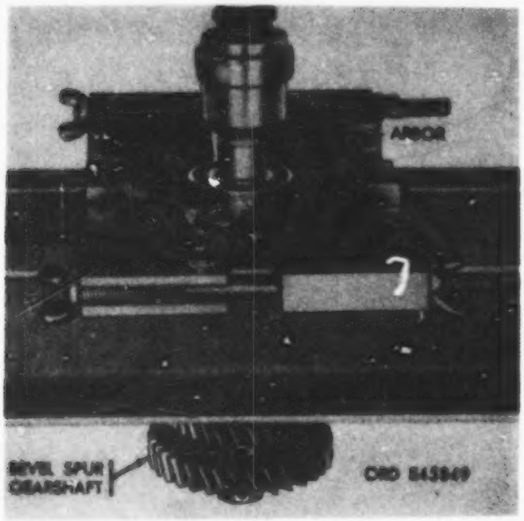
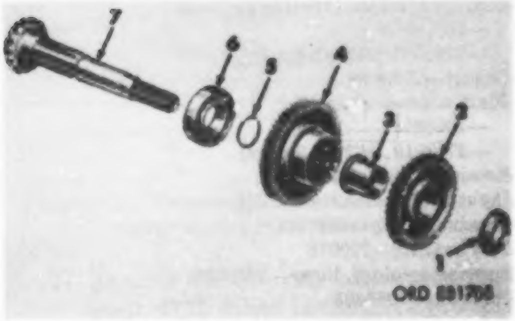

ARBOR
7
BEVEL SPUR GEARSHAFT
ORD E43949

Figure 6-13. Removing or installing annular ball bearing.


7
6
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3
2
1
ORD E81705

1—Thrust washer—7966670
2—High-speed spur gear—7966667
3—Sleeve bearing—7966669
4—Low-speed spur gear—7966666
5—Retaining ring—7966701
6—Annular ball bearing—700080
7—Drive pinion—8336247

Figure 6-14. Removing or installing high-speed spur gear, low-speed spur gear, and associated parts.

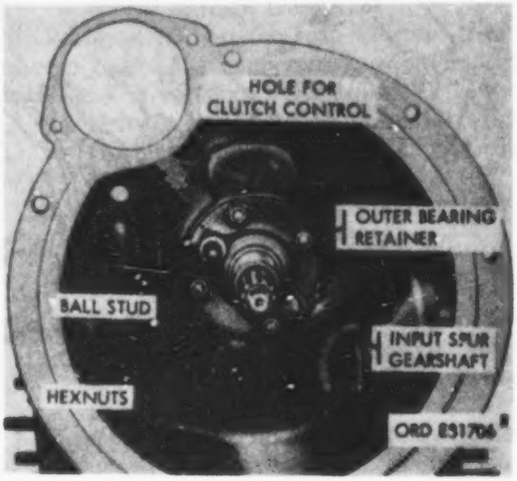

HOLE FOR CLUTCH CONTROL
OUTER BEARING RETAINER
BALL STUD
INPUT SPUR GEARSHAFT
HEXNUTS
ORD E81706

Figure 6-15. Loosening or tightening input spur gearshaft and outer bearing retainer and retaining nuts—exploded view.

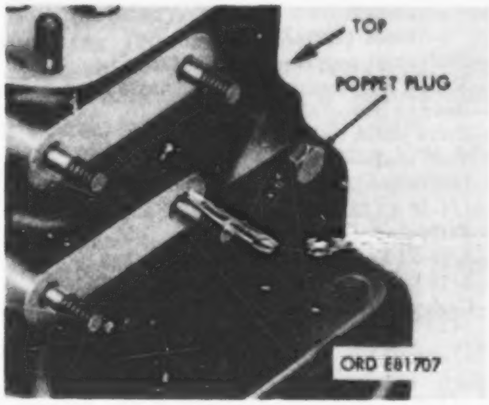

TOP
POPPET PLUG
ORD E81707

Figure 6-16. Removing or installing shift shaft poppet plug.

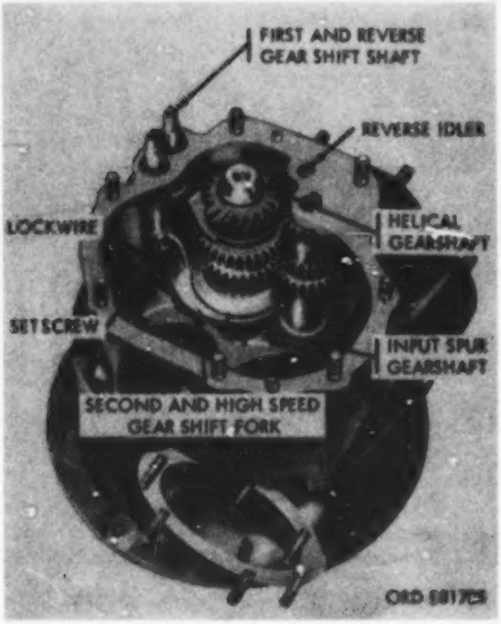

FIRST AND REVERSE GEAR SHIFT SHAFT
REVERSE IDLER
LOCKWIRE
HELICAL GEARSHAFT
SETSCREW
INPUT SPUR GEARSHAFT
SECOND AND HIGH SPEED GEAR SHIFT FORK
ORD E81725

Figure 6–17. Removing or installing helical gearshaft and related parts.

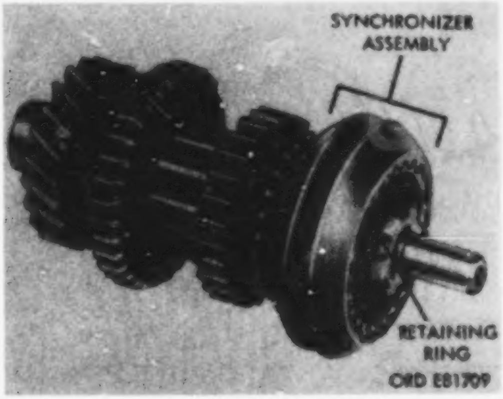
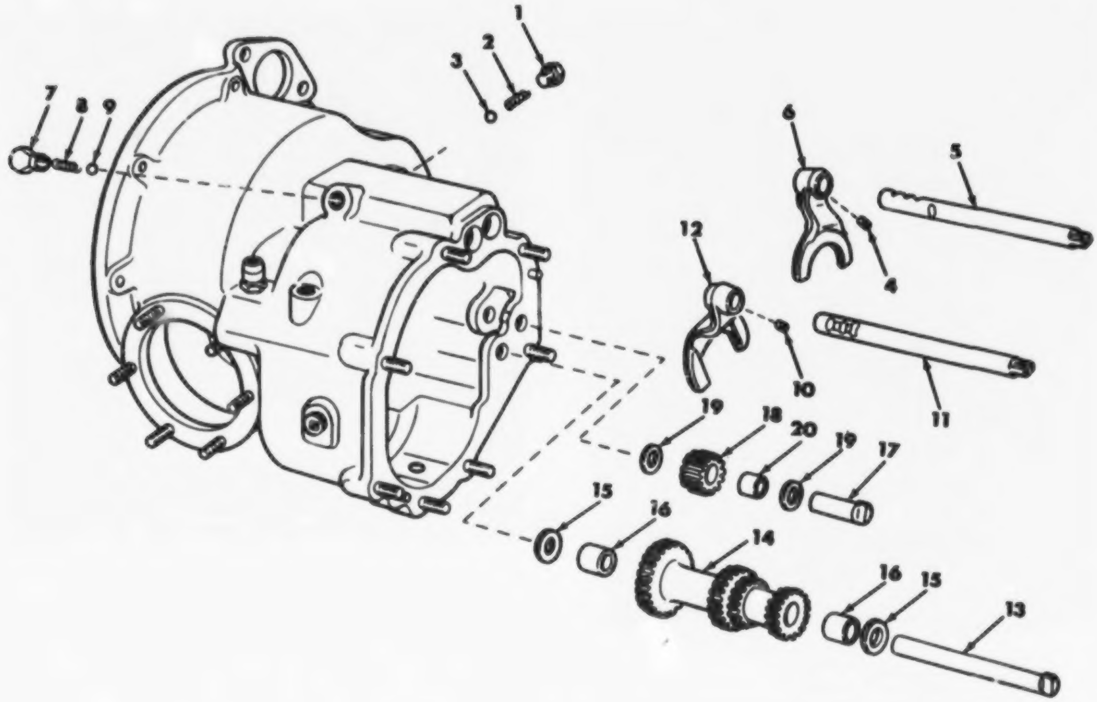

SYNCHRONIZER ASSEMBLY
RETAINING RING
ORD E81709

Figure 6–18. Removing or installing synchronizer assembly, second-speed spur gear, and first- and reverse-speed spur gear.



ORD E81710

1—Poppet plug—7696481
2—Helical compression spring—7089670
3—Bearing ball—145629
4—1/4-28 x 1/2 setscrew—7966632
5—Shaft (first and reverse)—7966628
6—Shift fork (first and reverse)—7966672
7—Poppet plug—7696481
8—Helical compression spring—7089670
9—Bearing ball—145629
10—1/4-28 x 1/2 setscrew—7966632
11—Shaft (second- and high-speed)
—8687097 (M274A3 only)
—11592020
12—Shift fork (second- and high-speed)—8687099
13—Shaft (cluster gear)—7966637
14—Cluster gear—8336245
15—Thrust washer (2)—7966639
16—Bearing (bushing type) (2)—8336235
17—Shaft (reverse idler gear)—7966638
18—Reverse idler gear—8336243
19—Thrust washer (2)—7966640
20—Bearing (bushing type)—8336244

Figure 6-19. Removing or replacing transmission gear assemblies—exploded view.

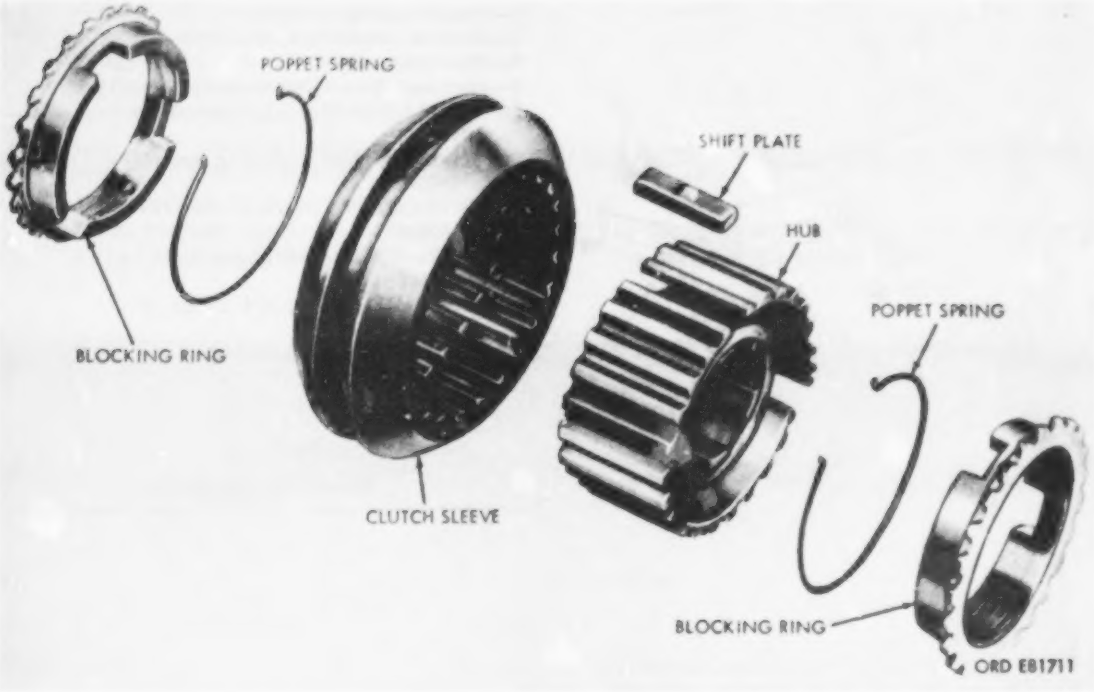
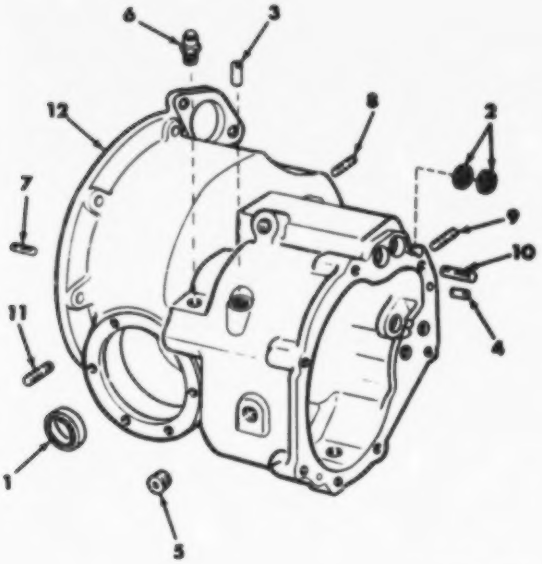

POPPET SPRING
SHIFT PLATE
HUB
POPPET SPRING
BLOCKING RING
CLUTCH SLEEVE
BLOCKING RING
ORD E81711

Figure 6-20. Disassembly or assembly of synchronizer assembly.



ORD E81712

Figure 6-21. Removing or installing seals, poppet bushing, breather and filler plug—exploded view.

1—Plain encased seal—7966787
2—Plain encased seal (4)—7966631
3—Poppet bushing—7760079
4—Headless straight pin (4)—88044-122730
5—Filler plug—444667
6—Vent assembly—7966661 (M274A3 only)
7—5/16-18 x 5/16-24 x 1-5/8-lg stud (4)—7055670
8—5/16-18 x 5/16-24 x 1-1/2-lg stud (6)—7966649
9—3/8-16 x 3/8-24 x 1-1/2-lg stud (4)—7966508
10—3/8-16 x 3/8-24 x 1-3/8-lg stud (7)—7966647
11—5/16-18 x 5/16-24 x 1-3/4-lg stud (4)—7966650
12—Housing, axle and transmission
—7966802 (M274A3)
—10945101 (M274A2 and M274A4)
—10945101-2 (M274A5)

Figure 6-21—Continued.

Section IV. CLEANING, INSPECTION, AND REPAIR

6-12. Cleaning

a. Wash all parts in drycleaning solvent or mineral spirits paint thinner. Remove hard crust with a stiff bristle brush that has been dipped in the cleaning agent.

b. Use lint-free cloth to clean machine surfaces and gears.

c. After cleaning, dry parts except bearings, with dry compressed air.

Caution: **Bearings must not be dried or spun with compressed air. Refer to TM 9-214 for inspection, care, and maintenance of antifriction bearings.**

6-13. Inspection

a. *Drop Gear Axle Housing, Gear Bearing Cage, and M274A5 Axle Cover Assembly.*

(1) *Drop gear axle housing assembly.*

(*a*) For inspection of rear drop gear axle housing and universal joint axle, refer to paragraph 5-8*e* and figure 5-17.

(*b*) Inspect annular ball bearings (6, fig 6-7) for galling, wear, scoring, or discoloration. Inspect bearing movement for looseness, roughness, or binding. Inspect inside diameter of roller needle bearings (9, fig 6-7) against limits specified in repair standards (para 5-10*f*).

(*c*) Inspect machined surfaces of drop gear axle housing cover (11, fig 6-7) for burrs or nicks. Inspect the outer surfaces for signs of cracks.

(*d*) Inspect splines on each end of the shaft (7, fig 6-7) against limits specified in repair standards (para 5-10*f*).

(2) *Gear bearing cage.* Refer to paragraph 5-8*e* (fig 5-9).

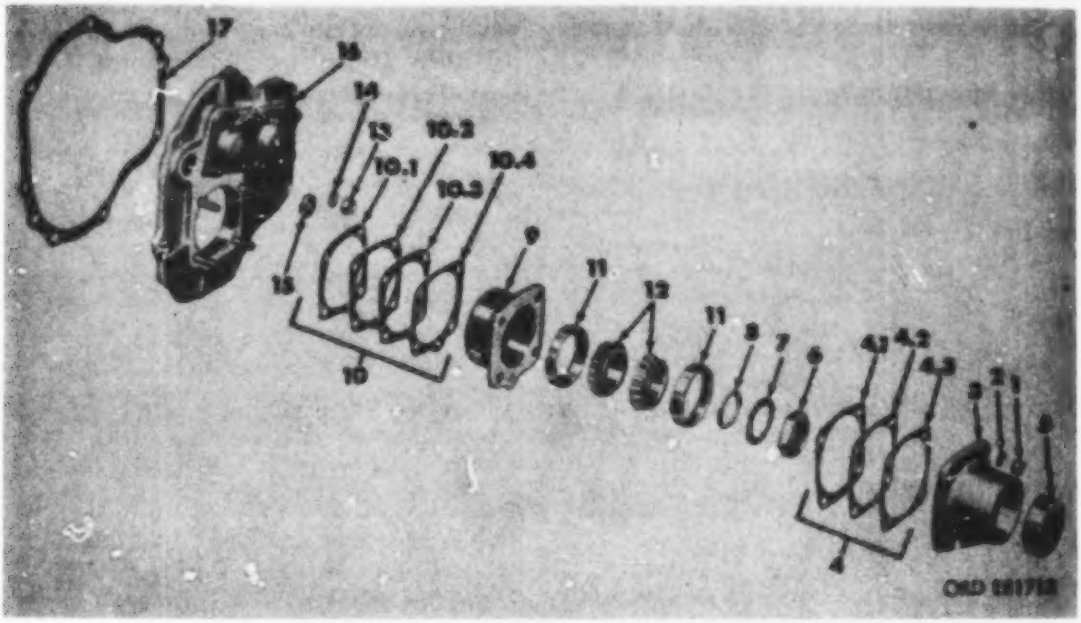
b. Transmission Housing End Cover Assembly and Related Parts.

(1) *Bearing retainers and related parts.*

Note. **The key numbers shown below refer to figure 6-22.**

Inspect outer bearing retainer (3) and inner bearing retainer (9) for cracks or distortion. Inspect machined surfaces for burs or nicks. Inspect plain encased seals (5 and 15) for nicks in sealing surfaces. Inspect tapered roller bearing cups (11) and tapered roller bearing cones and rollers (12) for galling, wear, scoring, or discoloration. Inspect shims (4 and 10) for tears or creases. Inspect transmission housing end cover (16) for any cracks or signs of distortion.

(2) *Transmission housing end cover assembly and related parts.*



1—5/16-24 plain hex nut (4)—96906-51966-5
2—5/16-inch split lockwashers (4)—96906-35338-45
3—Outer bearing retainer—7966694
4—Shim set—5702427
  Consists of:
  4.1—Shims (2)—7966706
  4.2—Shims (2)—7966704
  4.3—Shims (2)—7966705
5—Plain encased seal—7966691
6—Hex nut—7966714
7—Washer—7966803
8—Flat washer—7966693
9—Inner bearing retainer—7966690
10—Shim set—5702427
  Consists of:
  10.1—Shims (2)—7966707
  10.2—Shims (2)—7966706
  10.3—Shims (2)—7966704
  10.4—Shims (2)—7966705
11—Tapered roller bearing cups (2)—7966697
12—Tapered cone rollers (2)—7966696
13—3/8-24 plain hex nuts (7)—96906-51968-8
14—3/8-inch split lockwashers (7)—96906-35338-46
15—Plain encased seal (2)—7966631
16—End cover assembly—NPN
17—Gasket
  —7966598 (M274A3 and M274A4)
  —10945118 (M274A2 and M274A5)

Figure 6-22. Transmission housing end cover assembly, drive pinion bearing retainers, and related parts—exploded view.

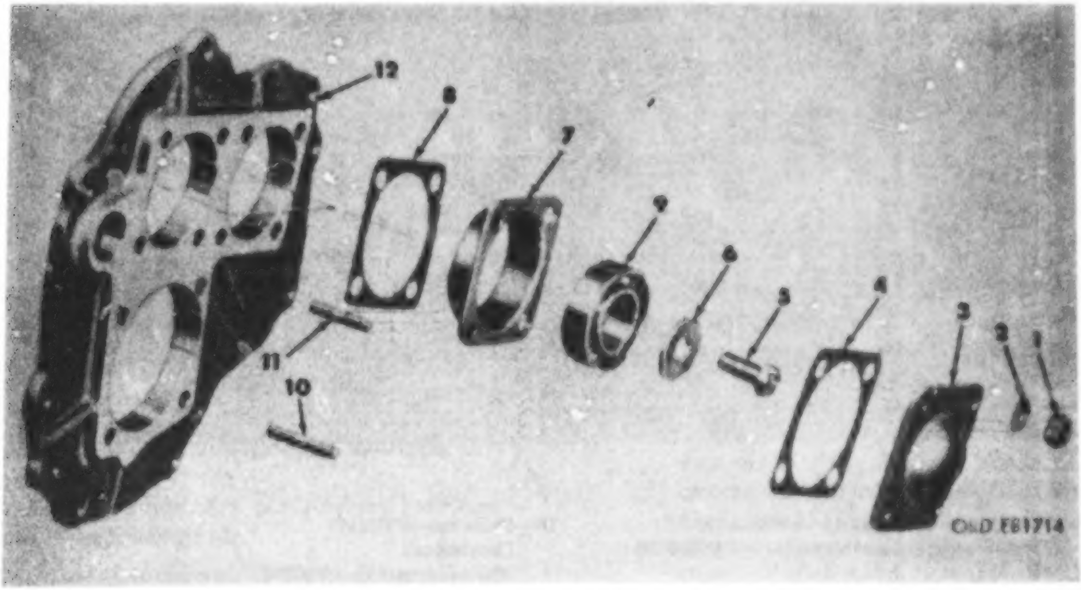
Note. The key numbers shown below refer to figure 6-23.

Inspect studs (10 and 11) for damaged threads, bends, or looseness in casting. Inspect inner bearing retainers (7) and outer bearing retainers (3) for cracks. Inspect machined surfaces for burs or nicks. Inspect annular ball bearing (9) for galling, wear, scoring, or discoloration. Check bearing movement for any looseness, roughness, or binding. Inspect hole in cover for range shift shaft against limits specified in repair standards (par. 6-14).

c. Bevel Spur Gearshaft, Countershaft Cluster Gear, Reverse Idler Spur Gear, and Related Parts.

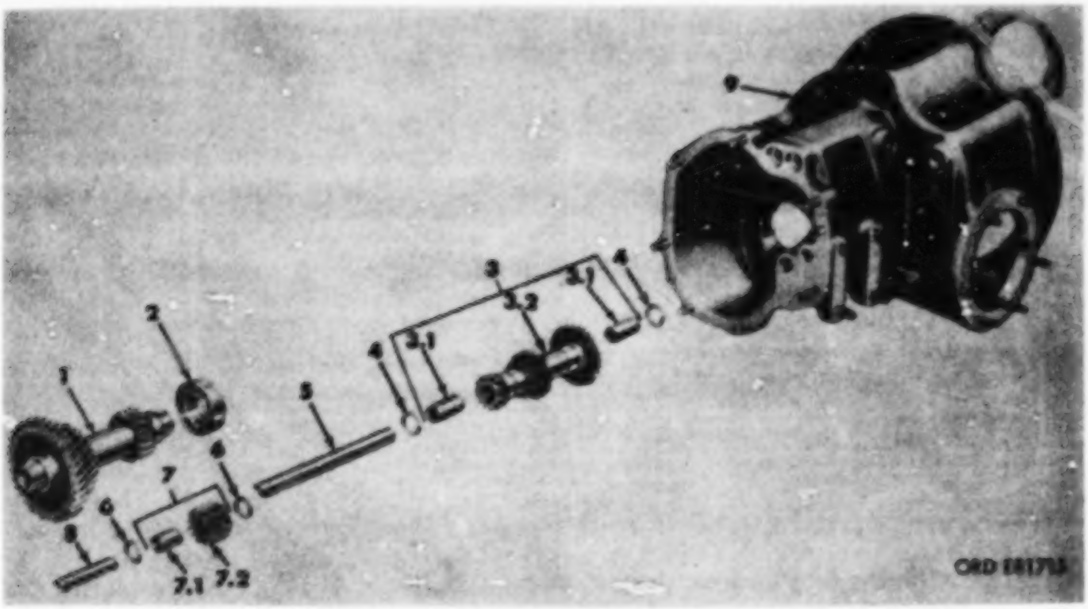
Note. The key numbers shown below refer to figure 6-24.

Inspect bevel spur gearshaft (1), countershaft cluster gear assembly (3), bushings (3.1), reverse idler spur gear assembly (7), and bushing (7.1), for scoring or signs of discoloration. Inspect gear teeth for chipping or rough spots. Inspect gears against limits specified in repair standards (par. 6-14). Inspect annular ball bearing (2) for galling, wear, scoring, or discoloration. Inspect bearing movement for any looseness, roughness, or binding. Inspect re-



1—5/16-24 plain hex nuts (8)—96906-51968-5
2—5/16-inch split lockwashers (8)—96906-35338-45
3—Bearing outer retainers (2)—7966695
4—Gaskets (2)—7966599-1
5—3/8-24 x 7/8 hex-head bolts (2)—8764610
6—Flat washers (2)—8764611
7—Bearing inner retainers (2)—7966708
8—Gaskets (2)—7966599
9—Annular ball bearing—700078
10—5/16-18 x 5/16-24 x 1-1/2-lg studs (4)—7966648
11—5/16-18 x 5/16-24 x 1-1/4-lg studs (8)—7966528
12—Transmission end cover
—7966646 (M274A3 and M274A4)
—10945117 (M274A2 and M274A5)

Figure 6-23. Transmission end cover assembly, bevel spur gearshaft and helical gearshaft bearing retainers, and related parts—exploded view.



1—Bevel spur gearshaft
—7966668 (M274A3 only)
—11592021
2—Annular ball bearing—700078
3—Countershaft cluster gearshaft assembly—7966635
3.1—Bushing (2)—8336235
3.2—Countershaft cluster gear—8336245
4—Thrust washers (2)—7966639
5—Countershaft cluster gearshaft—7966637
6—Thrust washers (2)—7966640
7—Reverse idler spur gear assembly—7966636
7.1—Bushing—8336244
7.2—Reverse idler spur gear—8336243
8—Reverse idler spur gearshaft—7966638
9—Housing assembly—NPN

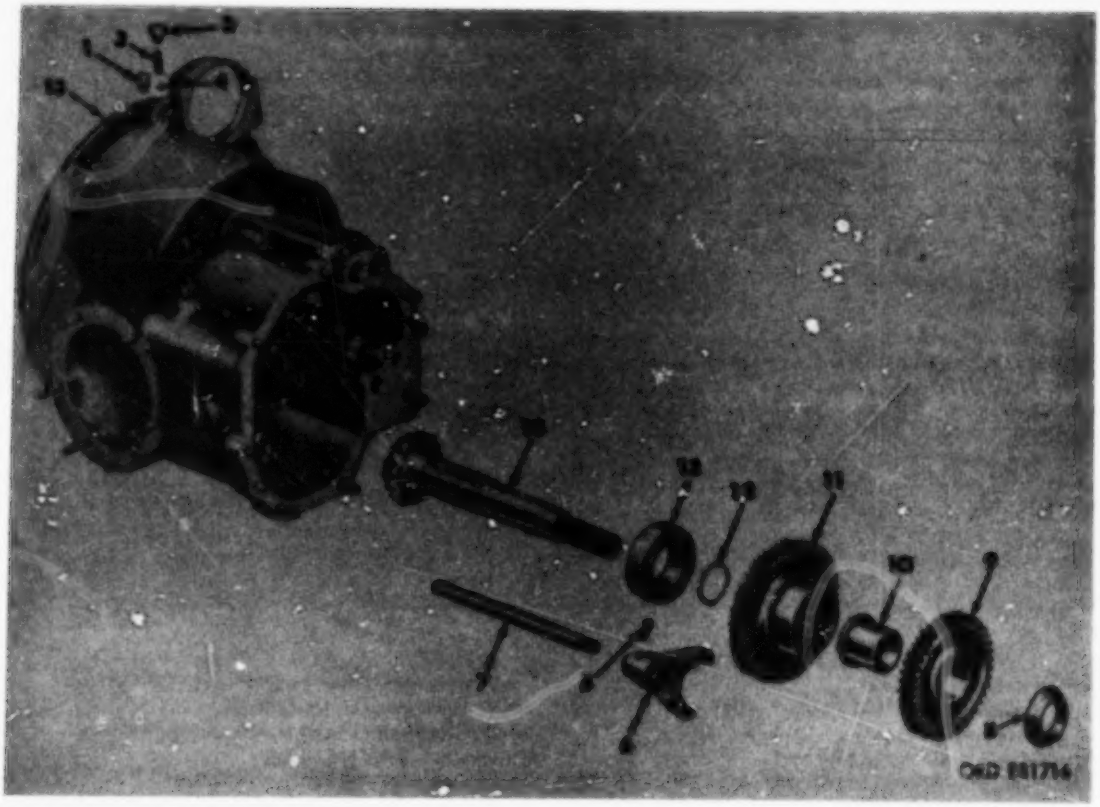
Figure 6-24. Bevel spur gearshaft, countershaft cluster gear, reverse idler spur gear, and related parts—exploded view.

verse idler spur gearshaft (8) and countershaft cluster gearshaft assembly (3) for nicks or burs. Inspect shafts against limits specified in repair standards (par. 6-14). Inspect thrust washers (4 and 6) and bushing-type bearings (3.1 and 7.1) against limits specified in repair standards (par. 6-14).

d. Drive Pinion, Low-Speed Spur Gear, High-Speed Spur Gear, and Related Parts.

Note. The key numbers shown below refer to figure 6-25.

Inspect drive pinion (14) bearing surfaces for scoring or signs of discoloration. Inspect splines and gear teeth for chipping or rough spots. Inspect pinion against limits specified in repair standards (par. 6-14). Inspect annular ball bearing (13) for galling, wear, scoring, or discoloration. Inspect bearing movement for any looseness, roughness, or binding. Inspect low-speed spur gear (11) and high-speed spur gear (9) for scoring or signs of discoloration. Inspect gear teeth and splines for chipping or rough spots. Inspect gears against limits specified in repair standards (par. 6-14). Inspect the sleeve bearing (10) against limits specified in repair standards (par. 6-14). Inspect range shift fork (6) fingers for straightness. Inspect threads in fork for damage. Inspect range shift shaft (7) for burs or nicks in grooves. Inspect fork and shaft against limits specified in repair standards (par. 6-14). Inspect helical compression spring (3) against limits specified in repair standards (par. 6-14).



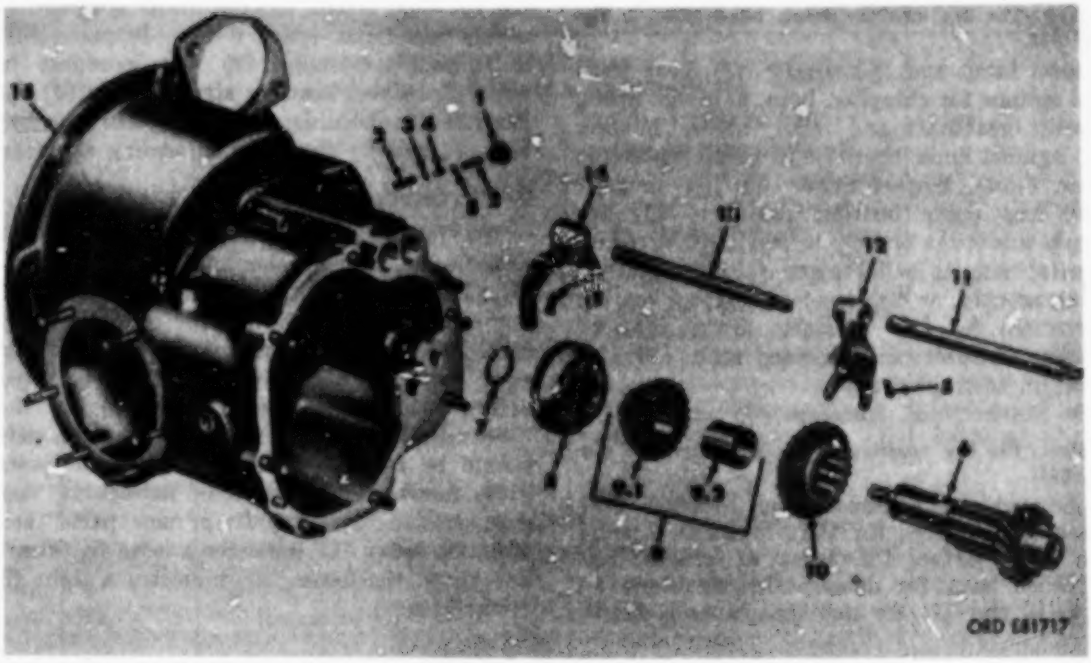
1—Vent assembly pipe plug—7966661
2—Shift shaft poppet plug—7696481
3—Helical compression spring—7089670
4—Bearing ball—145629
5—1/4-28 x 1/2 setscrew—7966632
6—Range shift fork—7966673
7—Range shift shaft—7966629
8—Thrust washer—7966670
9—High-speed spur gear—7966667
10—Sleeve bearing—7966669
11—Low-speed spur gear—7966666
12—Retaining ring—7966701
13—Annular ball bearing—700080
14—Drive pinion—8336247
15—Transmission housing assembly
—10945101 (M274A2 and M274A4)
—7966802 (M274A3)
—10145101-2 (M274A5)

Figure 6-25. Drive pinion, low-speed spur gear, high-speed spur gear, and related parts—exploded view.

e. Helical Gearshaft, Synchronizer Assembly and Related Parts.

Note. The key numbers shown below refer to figure 6-26.

Inspect helical gearshaft (6), gear teeth and splines for chipping or rough spots. Inspect gearshaft against limits specified in repair standards (par. 6-14). Inspect first and reverse spur gear (10) and second-speed spur gear (9.1) for chipping, rough spots, or burs in gear teeth or splines. Inspect gears against limits specified in repair standards (par. 6-14). Inspect bushing-type bearing (9.2) against limits specified in repair standards (par. 6-14). Inspect second- and high-speed gear shift shaft (13) and first and reverse gear shift shaft (11)



1—Shift shaft poppet plug (2)—7696481
2—Helical compression spring (2)—7089670
3—Bearing ball (2)—145629
4—1/4-28 x 1/2 headless straight pin (2)—7966675
5—Setscrew—7966632
6—Helical gearshaft
    —8686930 (M274A3 only)
    —10946869
7—Retaining ring—7372452
8—Synchronizer assembly—8686932
9—Second-speed spur gear—8686931
  Consists of:
  9.1—Gear—8336250
  9.2—Bushing-type bearing—8336249
10—First and reverse spur gear—7966711
11—First and reverse gear shift shaft—7966628
12—First and reverse gear shift fork—7966672
13—Second- and high-speed gear shift shaft
    —8687097 (M274A3 only)
    —11592020
14—Second- and high-speed gear shift fork—8687090
15—Transmission housing assembly
    —7966802 (M274A3)
    —10945101 (M274A2 and M274A4)
    —10945101-2 (M274A5)

Figure 6-26. Helical gearshaft, synchronizer assembly, and related parts—exploded view.

for burs or nicks in grooves. Inspect shafts against limits specified in repair standards (par. 6-14). Inspect second- and high-speed gear shift fork (14) and first and reverse gear shift fork (12) fingers for straightness. Inspect threads in forks for damage. Inspect forks to limits specified in repair standards (par. 6-14). Inspect helical compression springs (2) against limits specified in repair standards (par. 6-14).

f. Synchronizer Assembly. Refer to figure 6-20. Inspect splines of clutch sleeve and hub for burs, nicks, or signs of scoring. Inspect blocking rings and shift plates for nicks, burs, or signs of distortion. Inspect hub and sleeve for nicks, burs, or signs of distortion.

Note. Replace complete synchronizer assembly if any parts are found defective.

g. Input Spur Gearshaft and Related Parts.

Note. **The key numbers shown below refer to figure 6-12.**

Inspect input spur gearshaft (17), gear teeth and splines for chipping, burs, or rough spots. Inspect gearshaft and roller needle bearing (1) against limits specified in repair standards (par. 6-14). Inspect inner bearing retainer (20) and outer bearing retainer (13) for cracks and nicks or burs to machined surfaces. Inspect annular ball bearing (19) for galling, wear, scoring, or discoloration. Inspect bearing movement for any looseness, roughness, or binding. Inspect plain encased seals (15) for nicks in sealing surfaces.

h. Transmission Housing.

Note. **The key numbers shown below refer to figure 6-21.**

Inspect axle and transmission housing (12) machined surfaces for burs or nicks. Inspect the outer surface for signs of cracks, and threaded holes for damage. Inspect studs (7, 8, 9, 10 and 11) for damaged threads, bends, or looseness in housing. Inspect bores in housing for shift shafts against limits specified in repair standards (par. 6-14). Inspect shift shaft poppet bushing (3) for looseness in housing. Inspect headless straight pins (4) for looseness in housing. Inspect plain encased seals (1 and 2) for nicks in sealing surfaces.

6-14. Repair Standards

The following table contains repair standards for the transmission and rear axle assembly. Table 6 gives the minimum, maximum, and key clearances allowed for parts. Also included are the wear limits which indicate that point to which a part or parts may be worn before replacement. An asterisk (*) in the "Wear limits" column indicates that the part should be replaced when worn beyond limits given in the "Size and fit of new parts" column. In the "Size and fit of new parts" column, the letter "L" indicates a loose fit (clearance) and the letter "T" indicates a tight fit (interference).

Table 6. Repair Standards

Fig No.	Ref No.	Point of measurement	Size and fit of new parts	Wear limits
		Transmission Housing End Cover		
6-22	16	Bore for range shift shaft.	0.500 to 0.505.	0.508
		Bevel Spur Gearshaft, Countershaft Cluster Gear, Reverse Idler Spur Gear, and Related Parts		
6-24	1	36-tooth gear (M274A3) and 34-tooth gear (M274A2, M274A4, M274A5).	Backlash 0.004 to 0.008 with helical gearshaft.	0.012
6-24	1	26-tooth gear.	Backlash 0.004 to 0.008 with high-speed spur gear.	0.012
6-24	1	20-tooth gear (M274A3) and 22-tooth gear (M274A2, M274A4, M274A5).	Backlash 0.004 to 0.008 with low-speed spur gear.	0.012
6-24	4	Thickness of thrust washer.	0.060 to 0.062 must be flat and parallel within 0.001.	0.056
6-24	3.1	Inside diameter of bushing-type bearing.	Grind after installation to 0.6225 to 0.6235 true with pitch line.	0.6240
6-24	3.2	21-tooth cluster gear.	Backlash 0.0040 to 0.0094 with helical gearshaft.	0.012
6-24	3.2	28-tooth cluster gear.	Backlash 0.004 to 0.008 with high-speed spur gear.	0.012
6-24	3.2	15-tooth cluster gear.	Backlash 0.0040 to 0.0094 with low-speed spur gear.	0.012

Table 6. Repair Standards—Continued

Fig No.	Ref No.	Point of measurement	Size and fit of new parts	Wear limits
		Bevel Spur Gearshaft, Countershaft Cluster Gear, Reverse Idler Spur Gear, and Related Parts—Continued		
6-24	5	Diameter of countershaft cluster gearshaft.	0.6225 to 0.6230 for 7/16 inch under head; balance 0.6200 to 0.6205.	0.620
6-24	8.1 & 5	Fit of shaft in bearing.	0.0020L to 0.0035L	0.0045
6-24	6	Thickness of thrust washer.	0.060 to 0.062 must be flat and parrallel within 0.001.	0.056
6-24	7.2	14-tooth reverse idler spur gear.	Backlash 0.0040 to 0.0097 with countershaft cluster gear or first and reverse spur gear.	0.012
6-24	7.1	Inside diameter of bushing-type bearing.	Diamond-bore after installation to 0.502 to 0.503.	0.5045
6-24	8	Diameter of reverse idler spur gearshaft.	0.4999 to 0.5000.	0.4990
6-24	7.1 & 8	Fit of shaft in bushing.	0.020L to 0.0031L.	0.004L
		Drive Pinion, Low-Speed Spur Gear, High-Speed Spur Gear and Related Parts		
6-25	3	Helical compression spring.	0.938 lg, 0.219 to 0.234 dia.	0.925
6-25	14	15-tooth spiral bevel pinion.	Backlash 0.004 to 0.007 with mating gear.	*
6-25	14	Width of splines on pinion.	0.1510 to 0.1525.	*
		Width of spline spaces in yoke.	0.1535 to 0.1550.	*
		Fit of yoke on pinion splines.	0.0001L to 0.004L.	*
6-25	11	59-tooth low-speed spur gear.	Backlash 0.004 to 0.008 with bevel spur gearshaft.	0.012
6-25	11	Fork groove in low-speed spur gear.	1.990 to 2.000 dia, 0.192 to 0.201 wide	0.205
6-25	11	16-tooth internal gear.	Backlash 0.004 t0 0.009 with teeth of high-speed spur gear.	0.009
6-25	9	16-tooth on high-speed spur gear.	Backlash 0.004 to 0.009 with internal teeth of low-speed spur gear.	0.012
6-25	9	41-tooth high-speed spur gear.	Backlash 0.004 to 0.008 with bevel spur gearshaft.	0.012
6-25	9	Bore of high-speed spur gear.	1.500 to 1.501	1.504
6-25	10	Outside diameter of sleeve bearing.	1.4975 to 1.4980.	1.4945
6-25	9 & 10	Fit of spur gear on sleeve bearing.	0.0020L to 0.0030L.	0.006
6-25	6	Range shift fork.	0.010 to 0.020 rad, 0.182 to 0.187 wide	0.178
6-25	11 & 6	Fit of shift fork in groove.	0.010 to 0.225L dia, 0.005 to 0.016L wide.	0.027L
6-25	7	Diameter of range shift shaft.	0.496 to 0.498.	0.493
		Helical Gearshaft, Synchronizer Assembly, and Related Parts		
6-26	2	Helical compression spring.	0.938 lg, 0.219 to 0.234 dia	0.925
6-26	15	Bores for second- and high-speed shift shaft and first and reverse gear shift shaft.	0.500 to 0.505.	0.507

Table 6. Repair Standards—Continued

Fig No.	Ref No.	Point of measurement	Size and fit of new parts	Wear limits
		Helical Gearshaft, Synchronized Assembly, and Related Parts—Continued		
6–26	11 & 13	Diameter of second- and high-speed shift shaft and first and reverse gear shift shaft.	0.496 to 0.498.	0.494
6–26	15, 13, 11	Fit of shafts in housing.	0.002L to 0.009L.	0.012
6–16	14	Second- and high-speed gear shift fork fingers.	2.438 to 2.469 dia, 0.236 to 0.240 wide	0.232
6–26	12	First and reverse gear shift fork fingers.	0.823 to 0.83[illegible] ad, 0.182 to 0.187 wide.	* 0.178
6–26	6	22-tooth helical gearshaft.	Backlash 0.004 to 0.008 with bevel spur gearshaft	0.012
6–26	6	Diameter of gearshaft for bushing—type bearing.	1.1260 to 1.1265.	1.125
6–26	6	Diameter of gearshaft for roller needle bearing in input spur gearshaft.	0.4987 to 0.4995	0.4970
6–26	10	Fork groove in first and reverse spur gear.	1.615 to 1.625 dia, 0.192 to 0.201 wide.	* 0.205
6–26	12 & 10	Fit of fork fingers in groove.	0.201 to 0.046 dia, 0.005 to 0.016 wide.	* 0.204
6–26	10	33-tooth first and reverse spur gear.	Backlash 0.0040 to 0.0094 with countershaft cluster gear.	0.009
6–26	9.2	Inside diameter of bushing—type bearing.	1.1275 to 1.1280.	1.130
6–26	6 & 9.2	Fit of bearing on gearshaft.	0.0010 to 0.0020L.	0.0035L
6–26	9	27-tooth second-speed spur gear.	Backlash 0.004 to 0.093 with bevel spur gearshaft.	0.097
		Input Spur Gearshaft and Related Parts		
6–12	17	Inside diameter of roller needle bearing.	0.500.	0.502
6–26	6	Fit of gearshaft in bearing.	0.005L to 0.0010L.	0.0025L
6–12	17	21-tooth input spur gearshaft.	Backlash 0.004 to 0.008 with countershaft cluster gear.	0.012
6–12	17	Width of splines on gearshaft.	0.0142 to 0.1450.	*
		Outside diameter gearshaft at flywheel journal.	0.6250 to 0.6255.	0.624
		Inside diameter pilot bearing in flywheel.	0.628 to 0.629	0.630
6–12	17	Fit of gearshaft in pilot bearing.	0.0021 to 0.0040L.	0.006

Note. Refer to paragraph 5–10*e* for gear bearing cage repair standards.

Note. Refer to paragraph 5–10*f* for drop gear axle housing repair standards.

6–15. Torque Wrench Specifications

The information in table 7 contains torque wrench specifications keyed to figures. Use these specifications when assembling and installing transmission and rear axle components.

Table 7. Torque Wrench Specifications

Fig No.	Ref No.	Location	Torque lb ft
6–22	13	Axle and transmission housing end cover to housing nuts.	20–30
6–22	1	Bearing outer retainer to end cover.	10–15
6–22	6	Drive pinion hex nut to end cover.	80–100
6–23	3	Bearing outer retainer to end cover.	10–15
6–23	3	Bearing outer retainer to housing.	10–15
5–17	8	Steering knuckle cover to axle housing nuts.	10–15
5–17	10	Steering knuckle cover to axle housing bolts.	10–15
6–7	1	Axle cover to axle housing nuts.	10–15

Section V. ASSEMBLY AND INSTALLATION

6–16. General

Assembly and installation procedures are generally the reverse of disassembly and removal except for use of special tools and procedures.

6–17. Transmission Gears and Related Parts

a. Assembly of Transmission Housing.

(1) If headless straight pins were removed (par. 6–10), press new headless straight pins into transmission housing.

(2) For any plain studs removed (par. 6–10), refer to figure 6–21 and install studs (7) allowing 0.870 inch to protrude from housing; install studs (8), allowing 0.940 inch to protrude from housing; install studs (9), allowing 0.910 inch to protrude from housing; install studs (10), allowing 0.870 inch to protrude from housing; and install studs (11), allowing 1.190 inch to protrude from housing.

(3) If shift shaft poppet bushing (3, fig 6–21) was removed (par. 6–11*j*), install new bushing with the inner end from flush to 0.016 inch above bore for the shift shaft.

(4) Install the four plain encased seals in bores in top of housing, using replacer 5120–601–2229 (fig 6–5). The two inner seals are installed with the sealing lip in, and the two outer seals are installed with the sealing lip out.

(5) Install plain encased seal inside transmission housing with seal lip toward gear bearing cage side of housing.

b. Installation of Input Spur Gearshaft.

(1) Refer to paragraph 6–11*i* for installation of inner bearing retainer and associated parts on input spur gearshaft. If roller needle bearing was removed, press new bearing on input spur gearshaft until seated against shoulder in gearshaft.

(2) Install plain encased seals in outer bearing retainer with sealing lip toward the inner bearing retainer. Install gasket on inner bearing retainer. Slide outer bearing retainer on shaft and against gasket.

(3) Install gaskets over studs in transmission housing and install input spur gearshaft assembly on studs with ball stud in retainer alined with hole in housing, for clutch control. Install four 5/16-inch lockwashers and 5/16 –24 plain hexagon nuts on studs. Do not tighten nuts until after installation of helical gearshaft and associated parts.

c. Installation of Reverse Idler Spur Gear. If bushing-type bearing was removed (par. 6–11*h*), install new bearing on reverse idler spur gear. Assemble gear with a thrust washer on each end, in transmission housing. Install reverse idler spur gearshaft in housing with flat face of gearshaft toward inside of mounting flange. Refer to figure 6–19.

d. Installation of Countershaft Cluster Gear. If bushing-type bearings (16) were removed (par. 6-11*g*), install new bearings (16) in each end of countershaft cluster gear (14). Assemble gear with thrust washer (15) on each end, in transmission housing. Install countershaft cluster gearshaft (13) in housing with flat face of shaft toward inside edge of mounting flange and in line with reverse idler spur gearshaft (17) as shown in figure 6-19.

e. Assembly of Synchronizer Assembly. Refer to paragraph 6-11*f*. and install two poppet springs one at each end of hub. Position the three shift plates in the slots of the hub, push the plates inward against the springs, then slide the hub into the splines of the clutch sleeve until the knobs of the outside faces of the plates engage the notches inside the sleeve. Make sure the springs engage the small notches in the inner edge of the plates. Install blocking rings at each end of the sleeve with edge having three notches toward the center.

f. Installation of Second- and High-Speed Gear Shift Shaft.

(1) For the M274A3 (figs 6-27 and 6-19), lay transmission housing on right side and install bearing ball (9) and helical compression spring (8) in bottom of poppet bore in housing. At this point the ball will extend slightly into the bore for the second- and high-speed shift shaft (11, fig 6-19). Push shift shaft (11) into housing and slide second- and high-speed gear shift fork (12) over end of shaft (11) in housing. Insert setscrew (10) in fork (12) and tighten. Turn shaft so one of the three notches will contact the bearing ball (9). Insert rod into the poppet bore, push back on ball (9) and spring (8), and carefully push past ball while removing rod. Position shaft (11) with ball in center notch on side of shaft.

(2) For all other vehicles, stand the transmission housing upright, push second- and high-speed shift shaft into housing, and slide second- and high-speed shift fork over end of shaft in housing. Turn shaft so that three notches are facing the outside poppet bore in housing, and push shaft into bore in bottom of housing. Install bearing ball (9), helical compression spring (8), and shift shaft poppet plug (7) in poppet bore in gear bearing cage side of housing. Position shaft with ball in center notch on side of shaft and tighten poppet plug.

(3) Install headless straight pin in poppet bore between bores for second- and high-speed shift shaft, and first and reverse gear shift shaft. Start set screw (10) into tapped hole in shift fork (12) but do not tighten.

g. Installation of First and Reverse Gear Shift Shaft.

(1) Refer to figure 6-19 and follow the procedure listed below for assembly and installation of first and reverse gear shift shaft (5).

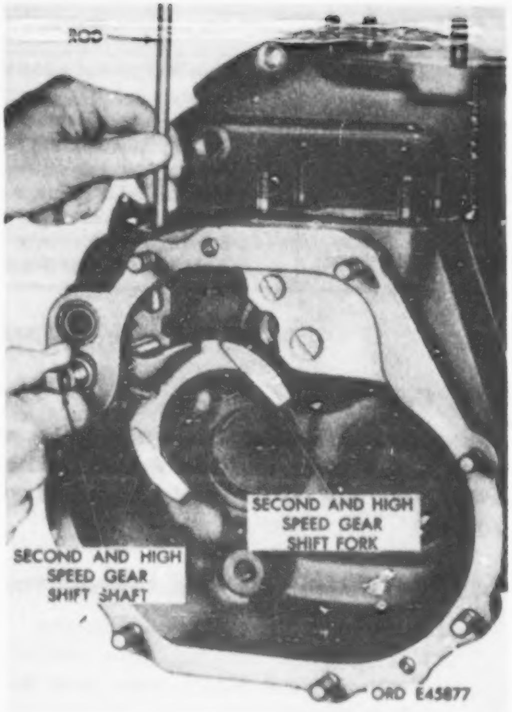

ROD
SECOND AND HIGH SPEED GEAR SHIFT FORK
SECOND AND HIGH SPEED GEAR SHIFT SHAFT
ORD E45877

Figure 6-27. Installing second- and high-speed gear shift shaft—M274A3 only.

(*a*) Push first and reverse gear shift shaft (5) into axle and transmission housing.

(*b*) Slide first and reverse gear shift fork (6) over end of shaft (5) in housing.

(*c*) Turn shaft so that the three notches are facing poppet face in housing, and push shaft (5) into bore.

(*d*) Position shift fork (6) with tapped hole in fork alined with countersunk hole in shaft. Install setscrew (4) in fork (6), tighten, and install locking wire.

(2) Reverse procedure in paragraph 6-11*d* and install bearing ball (3), helical compression spring (2), and shift shaft poppet plug (1) in poppet bore in housing.

h. Installation of Helical Gearshaft and Related Parts.

(1) If bushing-type bearing was removed (par. 6-11*c*), install a new bearing in second-speed spur gear with the two notches in the edge of the bearing (fig 6-28) alined with the oil grooves in the face of the gear hub. The new bearing must be rough-burnished to a diameter of 1.116 to 1.117 inch and finish-ground to 1.1275 to 1.1280 inch, true with pitch line.

(2) Refer to paragraph 6-11*c*, and assemble first- and reverse-speed spur gear (small end first), followed by second-speed spur gear (large end first), and synchronizer assembly on helical gearshaft. Install retaining ring.

(3) Work the helical gearshaft and assembled parts into the roller needle bearing in the end of input gearshaft and the second- and high-speed gear shift fork (12), and first and reverse gear shift fork (6), as shown in figure 6-19. Aline countersunk hole in second- and high-speed shift shaft (11) with setscrew (10) in fork (12); tighten setscrew and install locking wire.

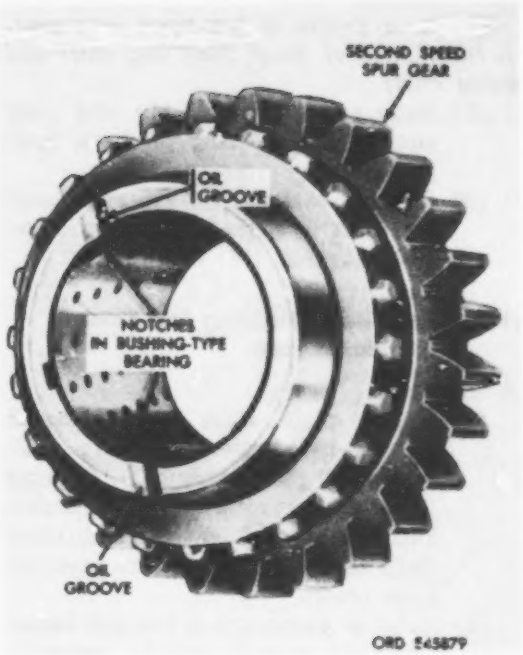


Figure 6-28. Second-speed spur gear with bushing-type bearing installed.

(4) Refer to figure 6-12 and tighten four 5/16-24 plain hexagon nuts (10) securing input spur gearshaft (17) and bearing retainers (13 and 20) in housing. Tighten nuts to a torque of 10-to-15 lb ft.

i. Installation of Drive Pinion, Range Shift Shaft, and Related Parts.

(1) Refer to paragraph 6-11*b* and assemble annular ball bearing, retaining ring, low-speed spur gear (gear end first), sleeve bearing (large end first), high-speed spur gear (small end first), and thrust washer on pinion.

(2) Refer to paragraph 6-11*b* and assemble range shift fork on range shift shaft.

(3) Refer to paragraph 6-11*b* and install drive pinion and range shift shaft into respective bores in transmission

housing. Make sure range shift fork is in groove in low-speed spur gear.

j. Installation of Bevel Spur Gearshaft and Related Parts.

(1) Refer to paragraph 6–11*a* and push annular ball bearing on bevel spur gearshaft.

(2) Refer to paragraph 6–11*a* and install gearshaft with bearing in transmission housing.

6–18. Transmission Housing End Cover and Related Parts

a. Assembly.

(1) If any plain studs were removed (par. 6–10*b*), refer to figure 6–21 and install plain studs (11), allowing 1.000 inch to protrude from transmission housing end cover; install studs (10), allowing 1.000 inch to protrude from cover.

(2) Refer to paragraph 6–10*b* and install two plain encased seals in transmission end cover, using replacer 5120–601–2229. (Refer to fig 6–5). The inner seal is installed with the sealing lip in. The outer seal is installed with the sealing lip out. Install on annular ball bearing in each inner bearing retainer. Install two new gaskets and two inner retainers with bearings on studs (refer to par. 6–10*b*).

b. Installation. Refer to paragraph 6–10 and carefully position transmission housing end cover assembly and new cover gasket on transmission housing plain studs. Install seven 3/8-inch lockwashers and 3/8–24 plain hexagon nuts. Tighten nuts to a torque of 20–30 lb ft. Install two 3/8–24 x 7/8 self-locking bolts and flat washers in bevel spur gearshaft and helical gearshaft.

6–19. Installation and Adjustment of Drive Pinion

a. General. Adjustment of the drive pinion and gear bearing cage in the transmission and rear axle assembly, for the most part, is the same as the procedure outlined for the same parts in the gear carrier assembly for the front axle (par. 5–16). The differences are outlined briefly below along with a reference to shim location for the transmission and rear axle assembly.

Note. The drive pinion also serves as a shaft for two transmission gears and, unlike the front axle, must be assembled in the housing before adjustment.

b. Installation. For installation of drive pinion refer to paragraph 6–17*i*.

c. Installation of Inner Bearing Retainers, Outer Bearing Retainers, and Associated Parts.

(1) Reverse procedure in paragraph 6–10*a* (6 through 8) and install drive pinion inner bearing retainer (shims first) on studs.

Note. If drive pinion was not replaced, install same shim set removed at disassembly. If a new drive pinion was installed, use a new, complete shim set.

(2) Reverse procedure in paragraph 6–10*a* (1 through 5) and install outer bearing retainer, with second shim set used for preload of drive pinion bearing on studs.

(3) Reverse procedure in paragraph 6–9*b* and install two new gaskets and outer bearing retainers on studs.

d. Preload Adjustment of Drive Pinion.

(1) Position transmission housing so that forward end of drive pinion points "up" (fig 6–29).

(2) Make several loops around drive pinion with a heavy cord and attach scale 6670–347–5922 to other end of cord (fig 6–29).

(3) If shim thickness is correct, the pull required to turn pinion should be three to five pounds. If specified pull is not obtained, remove shims to increase the pull and add shims to decrease the pull.

e. Depth Adjustment of Drive Pinion.

(1) The base of the drive pinion contains two markings (fig 5–27). The three-digit figure marking is for manufacturing use only. The second marking is used in conjunction with the depth-setting fixture (fig 2–2). The pinion in figure 5–27 marked "+2",

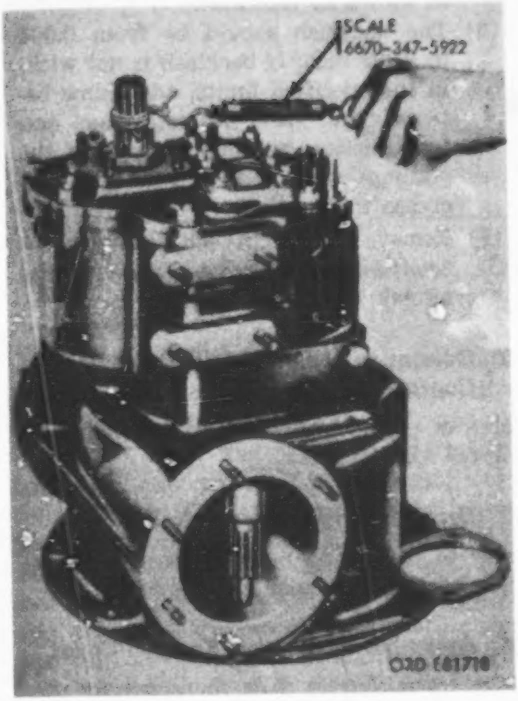


Figure 6-29. Checking preload of drive pinion using scale—6670-347-5922.

when combined with the instructions on the fixture plate, will require an 0.018-inch feeler gage for correct depth setting of pinion.

(2) Install depth-setting fixture 4910-713-1015 (fig 6-30) on studs on gear bearing side of housing. Make sure arm of fixture is against base of the pinion, and insert correct feeler gage between arm and fixture stud in fixture. Follow procedure on plate of fixture and add or remove shims between bearing retainer and end cover assembly to obtain correct depth setting of pinion.

6-20. Gear Bearing Cage

a. General. Refer to figure 5-9 for an exploded view of gear bearing cage.

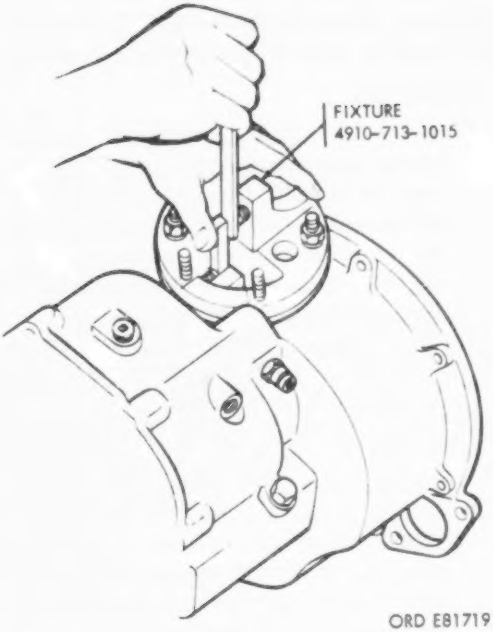


Figure 6-30. Checking depth of drive pinion using fixture—4910-713-1015.

b. Assembly.

(1) Refer to figure 5-9 and assemble tapered roller bearing cone and roller, sleeve spacer, and shims on drive gear. If the drive gear was not replaced, install shims removed at disassembly. If a new drive gear was installed, us a new, complete set of shims.

(2) Refer to figure 5-9 and install drive gear in gear bearing cage with key washer and plain hexagon nut. Turn gear in bearing cage as nut is being tightened to seat bearings. If shims are correct, a torque of 5-to-15 lb in. will be required to turn the gear in the cage. If adjustment is not correct, remove shims to increase the preload or add shims to decrease the preload.

(3) After correct preload is established, bend edge of key washer against flat of nut to prevent nut turning.

6-21. Installation of Gear Bearing Cage

a. General. Refer to figure 6-8 for location of gear bearing cage in transmission housing.

b. Installation.

(1) Refer to figure 6-8 and position shims and assembled gear bearing cage on studs in transmission housing. If drive gear was not replaced, install same shims removed at disassembly. If new drive gear is installed, use a new, complete set of shims.

(2) Secure gear bearing cage on studs with six 5/16-inch lockwashers and 5/16-inch hexagon nuts.

(3) Install backlash setting fixture 4910-713-1013 (fig 6-31) on plain hexagon nut at top of gear bearing cage.

(4) Attach a dial indicator to one of the studs (fig 6-31) in such a position that the indicator plunger will contact fixture between the two lines toward the end of the fixture.

(5) Clamp the drive pinion to prevent turning, and turn the drive gear back and forth to determine the backlash as shown by indicator.

(6) The backlash should be from 0.004 to 0.009 inch. If backlash is not within the specified limits, add shims between the gear bearing cage and transmission housing to increase the reading, and subtract shims to decrease the reading.

(7) Remove six 5/16-inch lockwashers and 5/16-inch hexagon nut for assembly of subassembly.

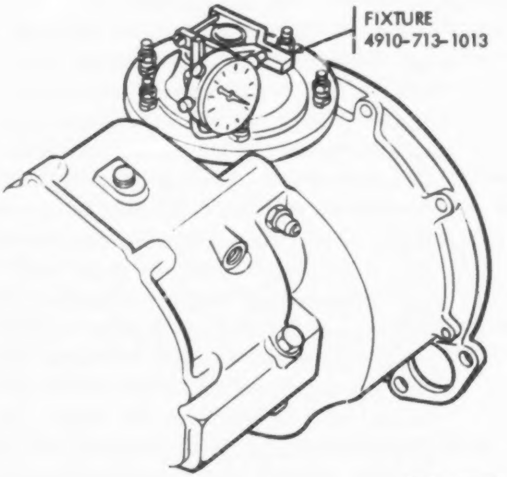


Figure 6-31. Backlash setting fixture—4910-713-1013 installed on transmission housing.

6-22. Determination of Correct Tooth Contact

Refer to paragraph 5-18 for determination of correct tooth contact.

6-23. Drop Gear Housing Assembly

Refer to paragraph 5-13 for assembly procedures of the drop gear axle housing.

6-24. Assembly of Steering Knuckle Cover

Refer to paragraph 5-6*c* for assembly procedure of the steering knuckle cover (fig 5-17)

6-25. Adjustment of Helical Driven Gear in Drop Gear Axle Housing

Refer to paragraph 5-16 for adjustment procedure of the helical driven gear in the drop gear axle housing (fig 5-24).

6-26. Assembly and Installation of Universal Joint

Refer to paragraph 6-9*a*(2) and reverse procedure to assemble and install axle shaft (M274A5 only).

6-27. Assembly of Subassemblies

Reverse procedures in paragraph 6-8.

6-28. Installation

Refer to TM 9-2320-246-20 for installation of transmission and rear axle assembly to vehicle.

CHAPTER 7

REPAIR OF FRAME, BODY, AND RELATED PARTS

Section I. DESCRIPTION AND DATA

7-1. Description

a. Frame. The frame assembly consists of a left and right horizontal frame tube, a left and right rear platform support, a left and right front tube, shield and precleaner assemblies, a front and rear crossmember support, and attaching parts. The left tube also functions as a air intake for the engine air cleaner. The precleaner is built into the left front tube extension (shield). The front cross-member support also mounts the operator's footrest, steering gear support bracket, brake and shift lever support bracket, and other miscellaneous components located at the front of the vehicle. Aluminum shims separate attaching steel parts from the magnesium platform on the M274A2, M274A3, and M274A4 models.

b. Body. The body assembly consists of a welded platform, metal handrail, lifting loop brackets, hangers, and miscellaneous cable guides. The two cross supports (the rear one is riveted to the underside of the platform) mount the left and right frame tubes. There are three access openings in the platform: one for mounting the weapon, one for access to the engine, and one for changing from two-to four-wheel steering (or vice versa).

Note. **There is no steering access opening cover on the M274A5 model.**

c. Differences Among Models. The M274A2, M274A3, and M274A4 models have magnesium platforms. The M274A5 model has an aluminum platform. Other differences will be noted in those paragraphs pertaining to the removal and disassembly of various frame and body parts.

7-2. Data

a. Frame.

Type	Flanged tubular, bolted to axles and body
Material	High-tensile steel tubing
Frame left and right tubes:	
Length	54.720 in.
Outside diameter	3.500 in.
Inside diameter	3.355 in.
Left and right rear supports:	
Length	12.560 in.
Outside diameter	2.500 in.
Inside diameter	2.334 in.
Left and right front:	
Length	10.000 in.
Outside diameter	2.500 in.
Inside diameter	2.334 in.

b. Body.

Material (M274A5)	aluminum
Material (all other models)	magnesium
Length	94.50 in.
Width	46.60 in.
Width over handrails	49.00 in.

Section II. REMOVAL AND DISASSEMBLY

7-3. Removal of Frame and Body Components

a. General. If direct or general support units receive a M274 model requiring frame or body repairs, several subassemblies must be removed before the frame or body can be removed. Remove these subassemblies in the general order suggested in paragraph 7-3*b*.

b. Removal of Subassemblies. Refer to TM 9-2320-246-20 for removal of subassemblies listed below, and remove these subassemblies in the general order indicated:

(1) Remove engine guard.
(2) Remove muffler.
(3) Remove air cleaner.
(4) Remove fuel lines and tank.
(5) Remove operator's seat.
(6) Remove operator's seat spring-loaded cylinder fastener.
(7) Remove operator's footrest assembly.
(8) Remove steering gear assembly.
(9) Remove brake and shift lever supports.
(10) Remove starter rope.
(11) Remove throttle cables and disconnect choke control cable.
(12) Remove transmission and range control rod assemblies.
(13) Remove ignition switch and cable.
(14) Remove engine and starter rope pulley housing.
(15) Remove brake flexible linkages.
(16) Remove choke conduit clamps, choke control cable assembly, and mounting plate.
(17) Separate frame and body assembly from front and rear axle housing assembly.

7-4. Disassembly of Frame and Body

a. General.

(1) The disassembly of frame and body components should be performed in proper order. The following procedures are listed in order of removal. Follow this general sequence (order) when disassembling the frame and body.

(2) The following figures (7-1 through 7-17) provide a visual reference to various components of the frame and body assemblies.

Note. Discard gaskets during disassembly, making sure that all gaskets discarded are replaced when assembling.

b. Disassembly of Frame. Refer to figure 7-1 during the following disassembly unless otherwise specified.

(1) *Removal of left and right frame tube assemblies.* Remove eight self locking hexagon nuts (1), sixteen flat washers (2 and 4), shims (5), and eight hexagon-head capscrews (3) freeing left (6) and right (7) frame tube assemblies from platform crossmembers.

(2) *Removal of seat and footrest stowage hooks.* Remove cotter pin (8), flat washer (9), and helical compression spring (10) freeing seat stowage hook (11) from the right frame tube (7). Repeat procedure for second stowage hook on same tube.

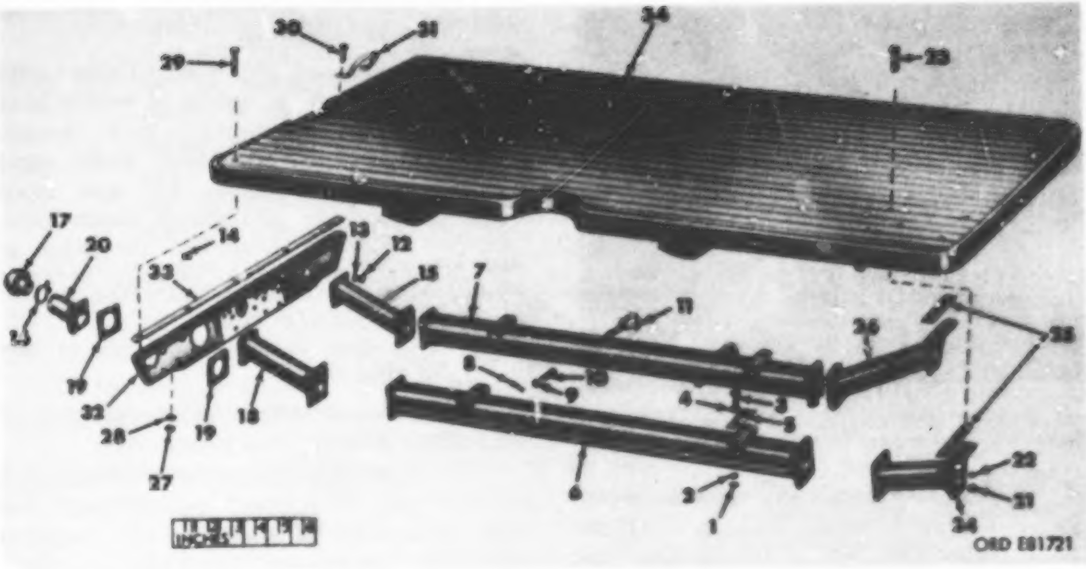
(3) *Removal of left and right front tube assemblies and precleaner assembly.* Remove four 3/8-24 self-locking hexagon nuts (12), four 3/8 lockwashers (13), and four 3/8-24 x 1 hexagon-head capscrews (14) securing left front tube assembly (18) and precleaner assembly (17) to the front crossmember support (32). Remove two gaskets (19). Removal of right front tube assembly (15) is similar except there is not a precleaner assembly (17) or gaskets (19).

(4) *Disassembly of precleaner assembly.* To disassemble the precleaner assembly remove spring hose clamp (16) and separate precleaner assembly (17) from tube (20).

(5) *Removal of left and right rear platform support assemblies.* Remove two self-locking hexagon nuts (21), two flat washers (22), left rear platform support assembly (24), shim (25), and two flathead machine screws (23) from the platform. Remove the right rear platform support (26) in the same manner as above.

Note. The rear crossmember support is welded to the platform underside.

(6) *Removal of front crossmember support and guard.* Remove two guide tube nuts and push out two cable guide tubes from crossmember support (fig 7-2). For all models except M274A3, remove five 3/8-16 self-locking hexagon nuts (27), five 3/8-inch flat washers (28), two 3/8-16 x



1—3/8-16 self-locking hex nuts (8)—96906-51922-17
2—3/8 in. flat washers (8)—96906-27183-14
3—3/8-16 x 1 1/4 hex-head capscrews (8) —96906-35291-62
4—3/8-in. flat washer (8)—96906-27183-14
5—Shims (as reqd)—8336448
6—Left frame tube
  —10941156 (M274A2 and M274A5)
  —8336054 (M274A3 and M274A4)
7—Right frame tube
  —10941157 (M274A2)
  —8336055 (M274A3 and M274A4)
  —11592088 (M274A5)
8—3/32 x 3/4 cotter pins (2)—96906-24665-283
9—3/8-in. flat washers (2)—96906-27183-14
10—Helical compression springs (2)—7966610
11—Seat stowage hook (2)—8336033
12—3/8-24 self-locking hex nuts (8)—96906-20365-624C
13—3/8-in. lockwashers (8)—96906-35338-46
14—3/8-24 x 1 hex-head capscrews (8)—96906-90726-60
15—Right front tube—8336063
16—Spring hose clamp—7048040
17—Precleaner assembly—8336344
18—Left front tube—8336063
19—Gaskets (2)—7966799
20—Shield assembly—7966930
21—3/8-16 self-locking hex nuts (4)—96906-51922-17
22—3/8-in. flat washers (4)—96906-27183-14
23—3/8-17 x 3-3/8 flathead machine screws (4)—192444
24—Left rear support
  —10919439 (M274A2 and M274A5)
  —8336064 (M274A3 and M274A4)
25—Rear shim (2)—10929923
26—Right rear support
  —10919444 (M274A2 and M274A5)
  —8336065 (M274A3 and M274A4)
27—3/8-16 self-locking hex nuts (5)—96906-51922-17
28—3/8-in. flat washer (5)—96906-27183-14
29—3/8-16 x 3-3/8 flathead machine screw
  (3)—192444
  (5)—192444
  (M274A3 only)
30—3/8-16 x 3-1/2 hex-head machine screw (2)—96906-35291-72 (all models except M274A3)
31—Guard—11592000 (all models except M274A3)
32—Front crossmember support—8336058
33—Front shim—8336472
34—Platform subassembly—NPN

Figure 7-1. Platform, frame and related parts—exploded view.

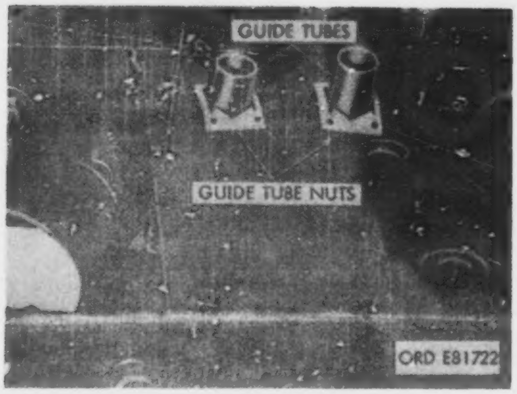


Figure 7-2. Removing or installing front crossmember support (1 of 2).

3-1/2 hexagon-head machine screws (30) (for guard (31), fig 7-1), and three 3/8-16 x 3-3/8 flathead machine screws (29) which hold front crossmember support (32) and shim (33) to the platform. Remove crossmember support (32) and shim (33). On the M274A3 model only, there is not a guard (31). In this case, remove all parts as above except the two 3/8-16 x 3-1/2 hexagon-head machine screws (30) which now will be five 3/8-16 x 3-3/8 flathead machine screws (29). Remove these five screws (29) from platform. (Refer to figs 7-1 and 7-4.)

c. Disassembly of Platform Assembly.

(1) *Removal and disassembly of steering access lid assembly, gun mount opening cover assembly, and engine access cover assembly.*

(*a*) *Removal (fig 7-5).* Using socket wrench on handle of vehicle handcrank (M274A3), turn counterclockwise the locks which secure steering access lid, gun mount opening, and engine access covers. Remove covers. On the other vehicles lift the "D" ring to unlock lids.

Note. Model M274A5 has no steering access lid.

(*b*) *Disassembly (figs 7-6 through 7-11).*

1. Disassembly of steering access lid on M274A2 and M274A4 models. Disassemble in numerical sequence as shown in figure 7-6.

2. Disassembly of steering access lid on M274A3 model. Disassemble in numerical sequence as shown in figure 7-7.

3. Disassembly of gun mount opening cover on M274A2, M274A4, and M274A5 models. Disassemble in numerical sequence as shown in figure 7-8.

4. Disassembly of gun mount opening cover on M274A3 model. Disassemble in numerical sequence as shown in figure 7-9.

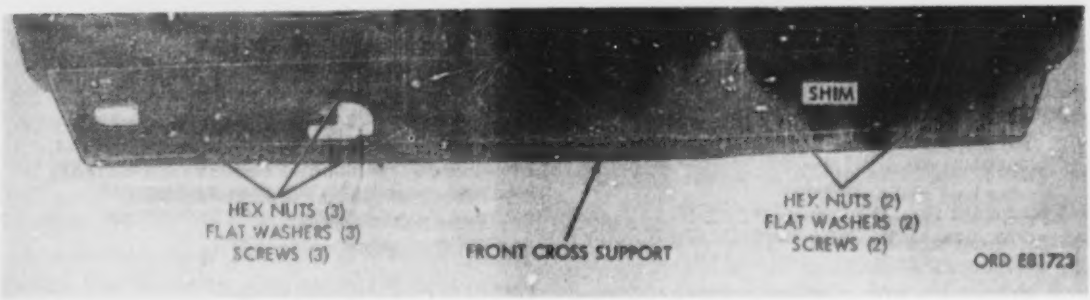


Figure 7-3. Removing or installing front crossmember support (2 of 2).

5. *Disassembly of engine access lid cover on M274A2, M274A4, and M274A5 models.* Disassemble in numerical sequence as shown in figure 7-10.

6. *Disassembly of engine access lid cover on the M274A3.* Disassemble in numerical sequence as shown in figure 7-11.

(2) *Removal of tow bar bracket and support.* Refer to TM 9-2320-246-20 for removal of tow bar bracket and support.

(3) *Removal of transfer linkage hanger assembly, transmission linkage hanger assembly, and throttle control cable bushings (fig 7-12).*

(*a*) *Transfer linkage hanger.* Remove one 5/16-18 hexagon nut, one 5/16-inch lockwasher, and one 5/16-18 x 1-1/2 flathead machine screw securing transfer linkage hanger and shim to underside of platform. Remove linkage hanger and shim.

(*b*) *Transmission linkage hanger.* Remove two 5/16-18 hexagon nuts, two 5/16-inch lockwashers, and two 5/16-18 x 1-1/2 flathead machine screws securing transmission linkage hanger and shim to underside of platform. Remove linkage hanger and shim.

(*c*) *Throttle control cable bushings.* Remove 1/4-inch clip and push throttle control cable bushing out of front crossmember support.

Note. This should be done before front crossmember support (32, fig 7-1) is removed from vehicle. One throttle control cable bushing is located on each crossmember support.

(4) *Removal of anchor pin flanged sleeve (fig 7-13).* Remove two 5/16-24 hexagon nuts, two 5/16-inch lockwashers, and two 5/16-24 x 1/2 flathead machine screws securing anchor pin flanged sleeve and shim to underside of platform. Remove flanged sleeve and shim.

(5) *Removal of handrail assembly.* Refer to TM 9-2320-246-20 for removal of the handrail assembly from around platform.

(6) *Removal of engine access cover lock rod (fig 7-4).* Remove engine access cover lock rod in numerical sequence as shown in figure 7-4.

(7) *Removal of lifting loops.* Refer to figure 7-4.

(*a*) *Front lifting loop.* Remove two self-locking hexagon nuts (1) and two hexagon-head screws (2) securing shims (5) and ends of front lifting loop (4) to platform. Remove two self-locking hexagon nuts (1) and two hexagon-head screws (3) securing the front lifting loop (4). Remove front lifting loop and two shims (5).

(*b*) *Rear lifting loops.* Remove four self-locking hexagon nuts (13) and four assembled washer bolts (14) securing rear lifting loop (15). Remove loop. Repeat above procedure to remove second lifting loop on opposite side of platform.

(8) *Removal of starter cable metal conduit, guide tube, and handle.* Many early vehicles in this series have starter cable handle tubes as shown in figure 7-14. Other later models will have starter cable handles and guides as shown in figure 7-15.

(*a*) Refer to figure 7-16. Remove 1/4-20 hexagon nut, 1/4-inch lockwasher, 1/4-inch flat washer, and 1/4-20 x 1 hexagon-head capscrew.

(*b*) Pull starter cable metal conduit out the rear through holes in the support.

(*c*) Remove 1/4-20 hexagon nut and the cable adjusting stop.

(*d*) Refer to figure 7-17. Remove two 1/4-20 self-locking hexagon nuts (1), and two 1/4-20 x 3/4 cross-recessed panhead machine screws (2). Remove starter cable tube (3).

(*e*) For vehicles having a different starter handle design, refer to figure 7-17. Remove two 1/4-20 self-

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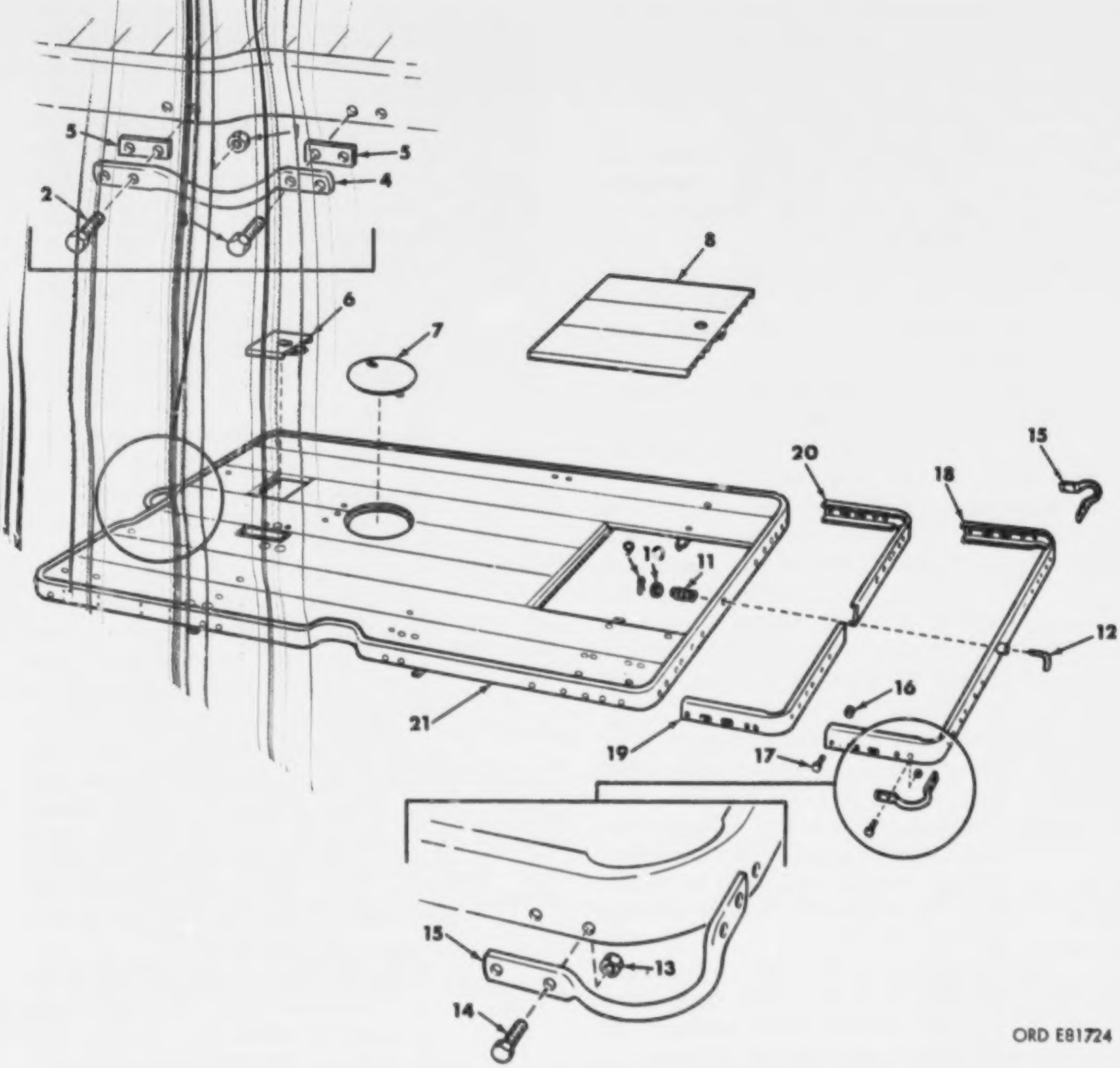


1—3/8-24 self-locking hex nuts (4)—96906-51922-21

2—3/8-24 x 3 hex-head capscrews (2)—96906-35292-70

3—3/8-24 x 4 hex-head capscrews (2)—96906-35292-74

4—Front lifting loop—8716893

5—Shims (2)—8336438

6—Steering access lid assembly
—10948259 (M274A2, M274A4)
—8716889 (M274A3)

7—Gun mount opening cover assembly
—7045601 (M274A2, M274A4)
—8336488 (M274A3)
—11592140 (M274A5)

8—Engine access cover assembly
—11592057 (M274A2, M274A4)
—7049679 (M274A3)
—11592135 (M274A5)

9—3/32 x 3/4 spring pin—96906-9048-073 (all models except M274A3)

10—5/16-in. flat washer—96906-27183-12 (all models except M274A3)

11—Spring—10948236 (all models except M274A3)

12—Lock rod—10948251 (all models except M274A3)

13—3/8-24 self-locking hex nuts (8)—96906-51922-21

Figure 7-4. Platform assembly—exploded view.

14—3/8-24 x 1-1/4 assembled washer bolts (8)—8716890
15—Rear lifting loops (2)—8716891
16—3/8-24 self-locking hex nuts (2)—96906-51922-21
17—3/8-24 x 1-1/4 assembled washer bolts (2)—8716890
18—Channel assembly—10945098
19—Right-side shim—11592047-2
20—Left-side shim—11592047-1
21—Welded platform assembly
    —11592100 (M274A5)
    —10945115 (M274A2, M274A4)
    —7049682 (M274A3)

Figure 7-4—Continued.

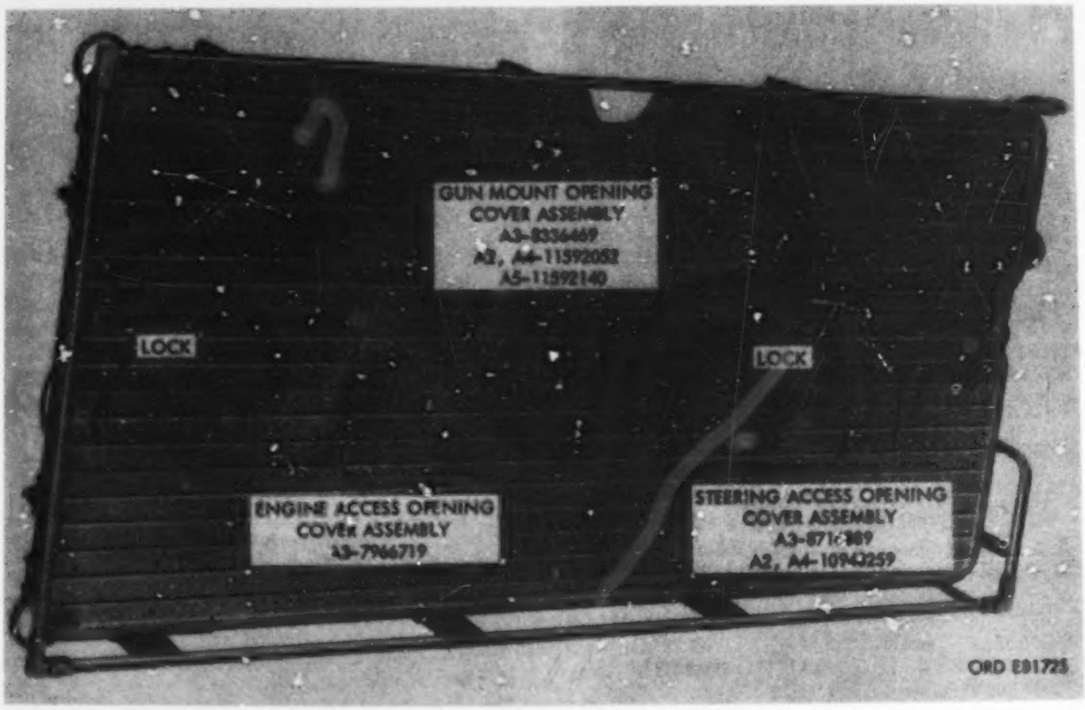
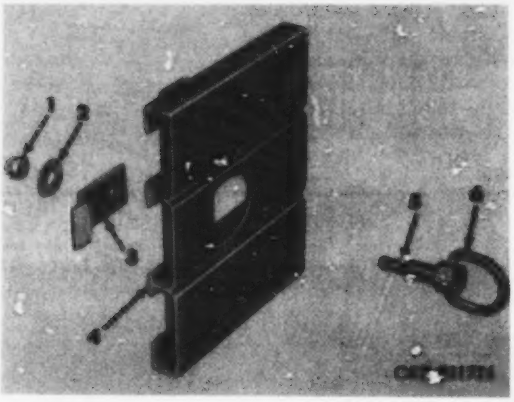

GUN MOUNT OPENING
COVER ASSEMBLY
A3-8336469
A2, A4-11592052
A5-11592140
LOCK
LOCK
ENGINE ACCESS OPENING
COVER ASSEMBLY
A3-7966719
STEERING ACCESS OPENING
COVER ASSEMBLY
A3-8716389
A2, A4-10943259
ORD E91725

Figure 7-5. Removing or installing steering access lid, gun mount opening and engine access covers.

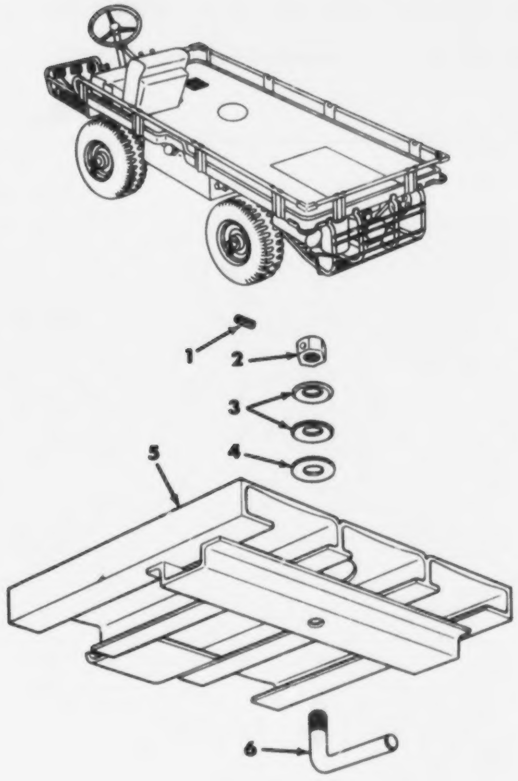
locking hexagon nuts (4), two 1/4-inch flat washers (5), and two 1/4-20 x 2 oval-head machine screws (6) from starter cable guide (7). Complete disassembly according to numerical sequence suggested in figure 7-17.

(9) *Removal of rear channel and shim (fig. 7-4).* Refer to figure 7-4 and remove assembled washer bolt (17) at both sides of platform. Separate rear channel (18) and shims (19 and 20) from platform (21).



1—5/13-24 hex nut—96906-20364-524
2—5/16-in. washer—96906-27183-12
3—Latch—11592049
4—Lid—10948258
5—Pin—10948246
6—"D" ring—10948239

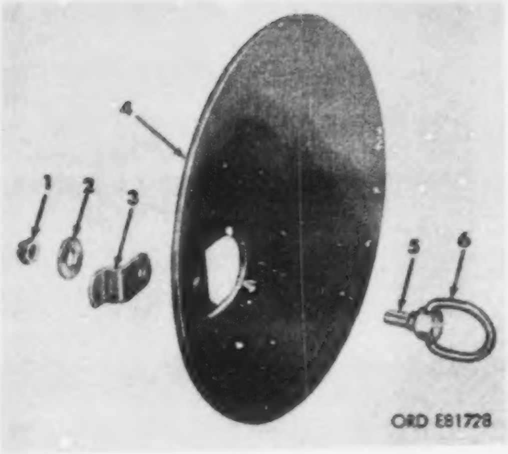
Figure 7-6. Disassembly or assembly of steering access lid—M274A2 and M274A4 models.



ORD E81727

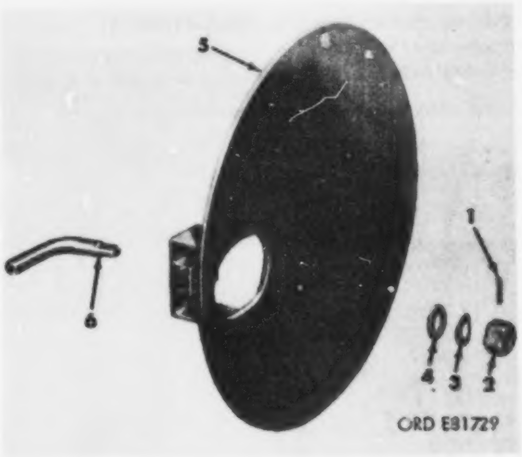
1—3/32 x 1/2 spring pin—96906-9048-069
2—Rod locknut—7966721
3—11/32-in. spring tension washers (2)—8329984
4—5/16-in. flat washer (3)—96906-27183-12
5—Lid—8336496
6—Lock rod—8966720

Figure 7-7. Disassembly or assembly of steering access lid—M274A3.



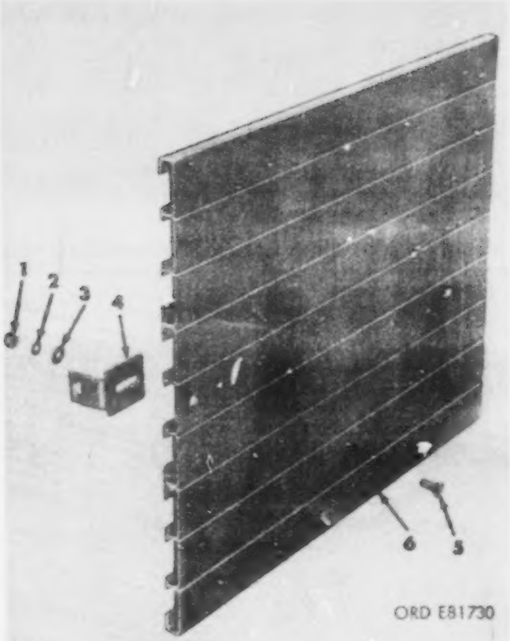
1—5/16-24 nut—96906-20364-524
2—5/16-in. flat washer—96906-27183-12
3—Latch—11592051
4—Cover—7045601 (M274A2, M274A4); 11592138 (M274A5)
5—Pin—10948248
6—Ring—10948239

Figure 7-8. Disassembly or assembly of gun mount opening cover on M274A2, M274A4, and M274A5 models.



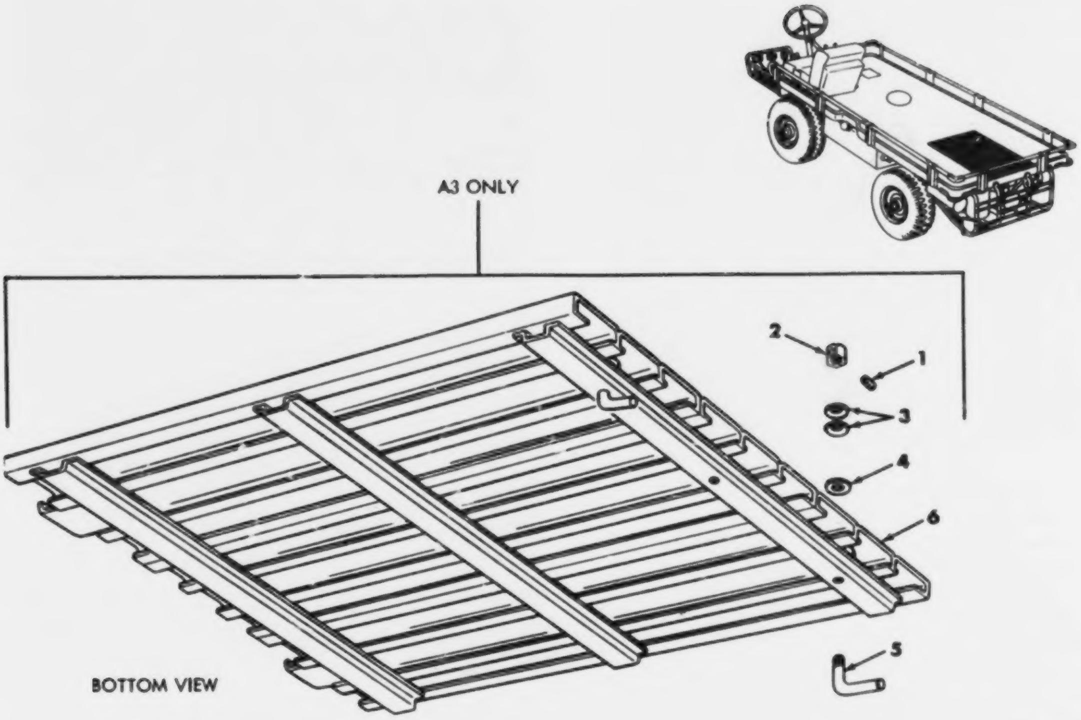
1—Spring pin—96906-9048-069
2—Rod locknut—7966721
3—Washer—8329984
4—5/16-in. flat washer—96906-27183-12
5—Cover—8336488
6—Lock rod—7966720

Figure 7-9. Disassembly or assembly of gun mount opening cover on the M274A3.



1—5/16-18 plain hex nut—96906-51967-5
2—5/16-in. lockwasher—96906-35338-45
3—5/16-in. flat washer—96906-27183-12
4—Bracket—11592058
5—5/16-18 x 3/4 flathead machine screw—96906-35192-84
6—Lid
    —11592057 (MS274A2, M274A4)
    —11592135 (M274A5)

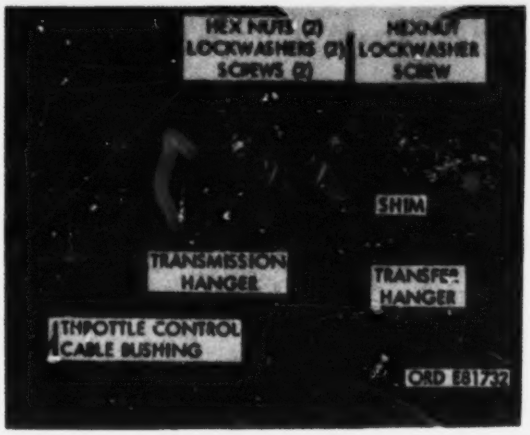
Figure 7-10. Disassembly or assembly of engine access lid cover on M274A2, M274A4, and M274A5 models.


A3 ONLY
1
2
3
4
5
6
BOTTOM VIEW

ORD E81731

1—3/32 x 1/2 spring pin (2)—96906-9048-069
2—Rod locknut (2)—7966721
3—Spring tension washer (4)—8329984
4—5/16-in. flat washer (2)—96906-27183-12
5—Lock rod (2)—7966720
6—Cover—7049679

Figure 7-11. Disassembly or assembly of engine access lid cover on M274A3.


HEX NUTS (2)
LOCKWASHERS (2)
SCREWS (2)
HEXNUT
LOCKWASHER
SCREW
SHIM
TRANSMISSION HANGER
TRANSFER HANGER
THROTTLE CONTROL CABLE BUSHING

ORD E81732

Figure 7-12. Removing or installing transfer linkage assembly, transmission linkage hanger assembly, and throttle control cable bushings.

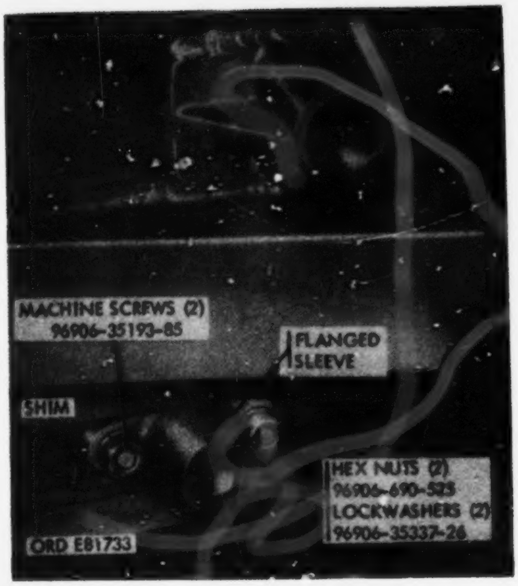

MACHINE SCREWS (2)
96906-35193-85
FLANGED SLEEVE
SHIM
HEX NUTS (2)
96906-690-523
LOCKWASHERS (2)
96906-35337-26
ORD E81733

Figure 7-13. Removing or installing anchor pin flanged sleeve.

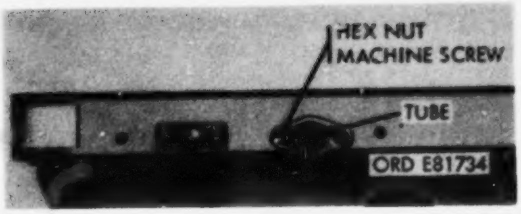

HEX NUT
MACHINE SCREW
TUBE
ORD E81734

Figure 7-14. Removing or installing starter cable handle tube (early models).

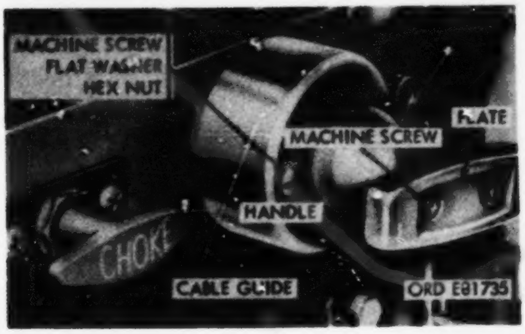
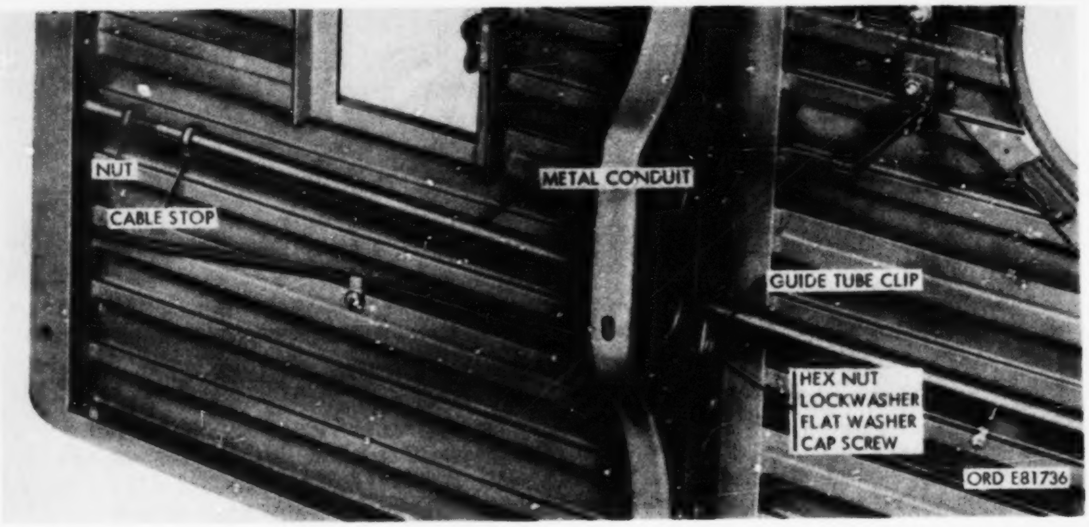
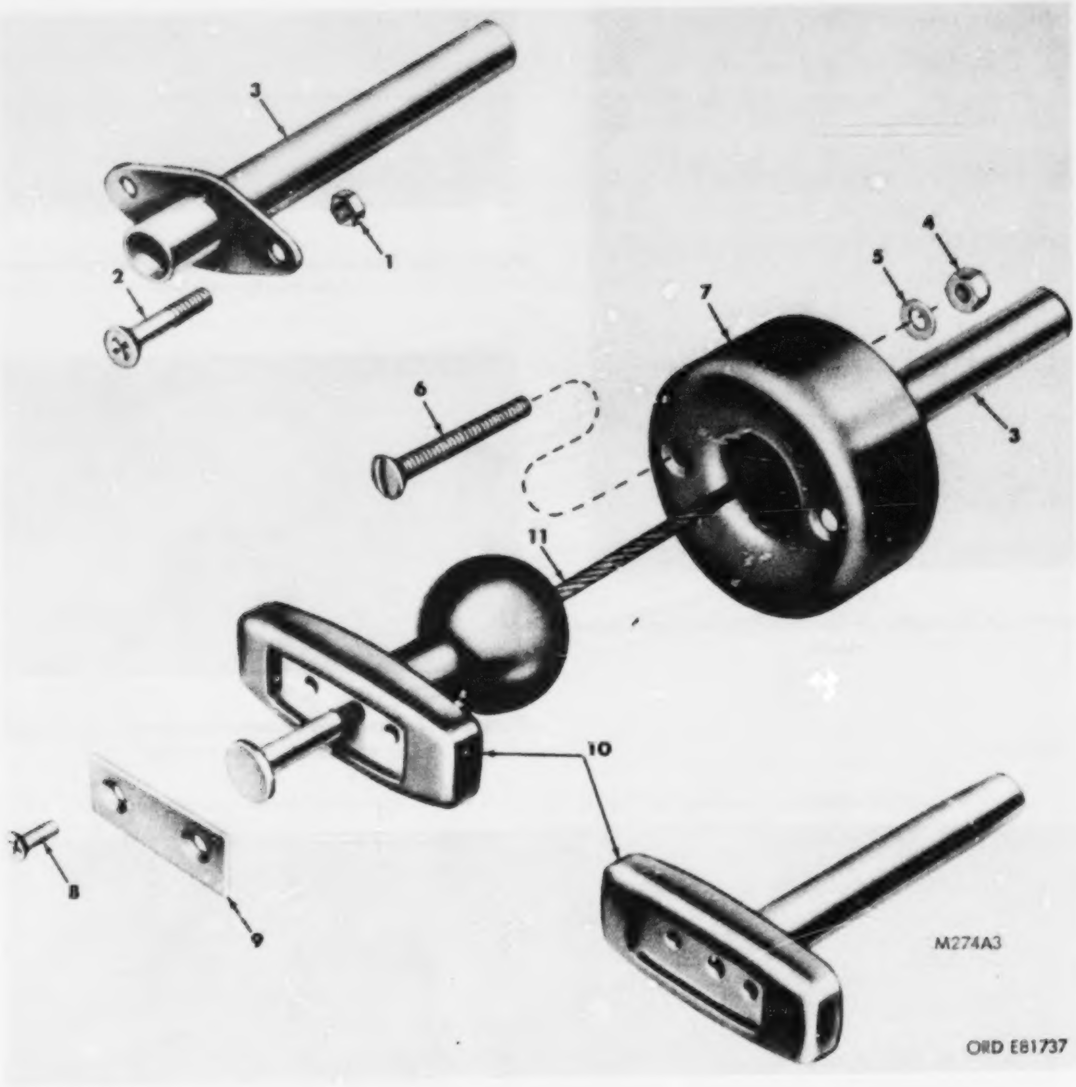

MACHINE SCREW
FLAT WASHER
HEX NUT
PLATE
MACHINE SCREW
HANDLE
CHOKE
CABLE GUIDE
ORD E81735

Figure 7-15. Removing or installing starter cable handle and guide (later models).


NUT
CABLE STOP
METAL CONDUIT
GUIDE TUBE CLIP
HEX NUT
LOCKWASHER
FLAT WASHER
CAP SCREW
ORD E81736

Filure 7-16. Removing or installing starter cable metal conduit.



1—1/4-20 self-locking hex nut (2)—96906-51922-1
2—1/4-20 x 3/4 cross-recessed machine screws (2)—160541 (M274A3)
3—Tube—8336116 (M274A3)
4—1/4-20 self-locking hex nut (2)—96906-51922-1
5—1/4-in. flat washer (2)—96906-27183-10
6—1/4-20 x 2 oval-head machine screws (2)—96906-35190-295 (all models except M274A3)
7—Starter cable guide—7045713 (all models except M274A3)
8—No. 8-32 x 7/16 flathead machine screws (2)—96906-35192-41
9—Plate—8744099-2 (all models except M274A3)
10—Starter cable handle
—7966976 (M274A3 only)
—8744099
11—Wire rope—10941160

Figure 7-17. Starter cable handle, rope, and related parts—exploded view.

Section III. CLEANING, INSPECTION, AND REPAIR

7-5. Cleaning

a. Use a drycleaning solvent or mineral spirits paint thinner to clean all components. With a stiff bristle brush that has been dipped in a cleaning agent, remove any hard crusts that may have formed on parts. Use steam or water for the removal of mud or dirt that has formed in heavy crusts.

b. It is especially important that the left frame tube (long tube), left rear platform support, left front tube, shield (tube extension at left front of vehicle), and precleaner be cleaned thoroughly, since the entire left-side tube assembly under vehicle serves as an air intake passage for the engine air cleaner.

7-6. Inspection

a. Platform, Frame, and Related Parts (fig 7-1).

Note. Key numbers referred to in 1, through 5 below are found in figure 7-1.

(1) Inspect left and right frame tube assemblies (6 and 7), left and right rear platform support assemblies (24 and 26), and left and right front tube assemblies (18 and 15) for any bends, cracks, bad dents, or other excessive damage.

(2) Inspect all flanges for any signs of cracked or broken welds, distortions, elongated mounting holes, or other indications of defects.

(3) Inspect precleaner (17) and front tube extension (shield) (20) for any bends, cracks, cracked or broken welds.

(4) Inspect crossmember supports for signs of cracks, distortion, or other damage. Also inspect rivets that secure supports to platform, for any looseness or signs of stress.

(5) Inspect stowage seat hook assemblies (11) for straightness or binding action in right tube.

(6) Inspect all brackets, hanger assemblies, and mounting clips for straightness, any cracks, or excessively damaged threads.

b. Platform Assembly (fig 7-4).

Note. Key numbers referred to in 1 and 2 below are found in figure 7-4. Key-numbered components referred to in 3 below are also found in figures 7-6 through 7-11.

(1) Inspect platform (21) for bad dents, flatness, or for any breaks that might be in platform weld beads. Also inspect threads of nuts around inside edge of platform, for damage.

(2) Inspect rear lifting loops (15), front lifting loop (4), and guard (31, fig 7-1), for any bends or broken welds.

(3) Inspect steering access lid (6, fig 7-4, and figs 7-6 and 7-7), gun mount opening cover (7, fig 7-4, and figs 7-8 and 7-9), and engine access cover (8, fig 7-4, and figs 7-10 and 7-11) for broken or damaged parts.

c. Handrail Assembly (refer to TM 9-2320-246-20). Inspect corner fittings at rear and front of handrail assembly for straightness. Also inspect handrail assembly itself for any signs of bends, cracks, or broken welds.

d. Starter Cable Handle, Rope, and Related Parts (fig 7-17). Inspect starter cable handle (10) for signs of any damage. Inspect starter cable tube (3) and cable guide (7) for damage. Inspect wire rope (11) for cuts or other defects.

7-7. Repair

***Caution*: Do not use ordinary welding methods when welding magnesium parts. Use the inert-gas-metal-arc welding process. Refer to TM 9-237.**

a. Platform, Frame, and Related Parts.

(1) Tube assemblies, rear supports, and front tube assemblies having minor dents may be straightened. Broken or cracked welds at flanges may be repaired by welding. Parts having deep dents, gouges or damaged flanges, should be replaced.

(2) The front support assembly should be straightened if bent. Minor cracks or

broken welds may be repaired by welding. Replace support assembly if it cannot be repaired.

(3) Supports having cracks or broken welds may be repaired by welding. Tighten or replace loose rivets. If the support is beyond repair, drill out old rivets. If the support is beyond repair, drill out old rivets from platform. Position shim and new support on underside of platform with the flange of the support extending forward. Secure with 1/4 x 11/16 roundhead rivets.

Note. The tube assemblies, rear supports, front tube assemblies, and platform supports are subject to severe stress, particularly when the vehicle is operating in rough terrain. If any damage exists that may cause failure to any of these parts, they should be replaced.

b. Platform Assembly.

(1) Straighten platform if bent. Reweld any broken welds between platform. Small holes may be repaired by welding. Minor thread damage to nuts may be corrected by running a thread tap over threads.

(2) Straighten rear lifting loops, front lifting loop, or guard if bent. Broken welds may be repaired by welding.

(3) Covers and lid may be straightened if bent. Replace damaged lock parts as required. If necessary to replace any lock catches, drill out old rivet, position new catch with rivet holes realined, and secure with new lock catch rivets.

(4) Replace starter cable handle, rope, or related parts if any damage exists. If any of the parts in figure 7-15 that are indicated for the early M274 models require replacement, all of the parts for the early M274A3 should be replaced by the parts for the late M274A3. Refer to figure 7-17 for related parts that would require replacement at the same time.

c. Handrail Assembly. Straighten any bends in handrail assemblies, if possible. All minor cracks or broken welds can be repaired by welding. Replace excessively damaged handrails.

7-8. Torque Wrench Specifications

a. Refer to figure 7-1. When securing two tubes (6 and 7) to axle housings, tighten eight 7/16-20 x 3-1/2 hexagon-head capscrews and eight 7/16-20 x 3-3/4 hexagon-head capscrews to 35-45 lb ft torque.

b. Refer to figure 7-1. When securing two rear tube supports (24 and 26) to platform subassembly (34), tighten four 3/8-16 self-locking nuts (21) to 20-30 lb ft torque.

c. Refer to figure 7-1. When securing two front tubes (15 and 18) to crossmember support (32), tighten eight 3/8-24 self-locking hexagon nuts (12) to 20-30 lb ft torque.

Section IV. ASSEMBLY OF FRAME AND BODY

7-9. General

Procedures for assembly of the frame and body are almost the exact reverse of those procedures covering disassembly. Therefore, assembly procedures will, for the most part, closely conform to the reverse of disassembly.

Note. Make sure all gaskets are replaced.

7-10. Assembly of Body Assembly

a. Install Rear Channel and Shims. Refer to figure 7-4 and reverse those procedures.

b. Install Starter Cable Metal Conduit and Handle. Refer to figures 7-14 through 7-17 and reverse those procedures.

c. Install Lifting Loops. Refer to figure 7-4 and reverse removal procedures.

d. Install Handrail Assemblies. Refer to TM 9-2320-246-20 for installation of handrails.

e. Install Transfer Linkage Hanger Assembly, Transmission Linkage Hanger Assembly, and Throttle Control Cable Bushing. Refer to figure 7-12 and reverse procedures of paragraph 7-4*c*(3).

f. Install Tow Bar Bracket and Support. Refer to TM 9-2320-246-20 for installation of tow bar bracket and support to the vehicle.

g. Assemble and Install Steering Access Lid, Gun Mount Opening Cover, and Engine Access Cover on the M274A3 Model. Refer to figures 7-7, 7-9, and 7-11, and reverse those procedures.

h. Assemble and Install Steering Access Lid, Gun Mount Opening Cover, and Engine Access Cover on M274A2, M274A4, and M274A5 Models. Refer to figures 7-6, 7-8, and 7-10, and reverse those procedures.

Note. Flat washers provide proper adjustment in locks of the platform. If lock is too tight, remove lockwashers until proper adjustment is attained. If lock is too loose, add lockwashers until proper adjustment is obtained.

7-11. Assembly of Frame Assembly

Note. When securing crossmember support and tube assemblies (6 and 7, fig 7-1) to the platform and axles, it might prove most convenient to tighten these assemblies only fingertight. Then after parts are in place, tighten bolts and nuts to those torques specified in paragraph 7-8.

a. Install Crossmember Support Assembly and Guard. Refer to items 27 through 33, figure 7-1, and reverse removal procedures.

b. Install Front Tubes, Shield, and Precleaner Assemblies. Refer to items 16, 17, 19 and 20, figure 7-1, and reverse removal procedures.

Note. Install front tube assemblies with the smaller flanged end against the front crossmember support, and with the opposite ends inclined downward.

c. Install Left and Right Rear Platform Support Assemblies. Refer to parts 24 and 26 in figure 7-1, and reverse removal procedures.

Note. Install left and right rear platform support assemblies with the larger flanged ends up against mounting brackets, and with the opposite ends inclined downward.

d. Install Left and Right Frame Tube Assemblies. Refer to parts 6 and 7 in figure 7-1, and reverse removal procedures.

Note. Install two stowage seat hook assemblies to the right tube assembly (refer to items 8, 9, 10 and 11, figure 7-1) with hooked ends at outerside of the tube assembly.

Section V. INSTALLATION OF FRAME AND BODY

7-12. Installation of Frame and Body to Axle Assemblies

Refer to TM 9-2320-246-20 for installation of frame and body assembly to axle assemblies.

7-13. Installation of Accessories and Related Parts on Frame and Body

Refer to manuals listed below and reverse removal procedures:

a. Choke Control Mounting Plate, Choke Control and Cable Assembly. Refer to TM 9-2320-246-20.

b. Choke Conduit Clamps. Refer to TM 9-2320-246-20.

c. Brake Flexible Linkage. Refer to TM 9-2320-246-20.

d. Engine and Starter Rope Pulley Housing. Refer to TM 9-2320-246-20.

e. Ignition Switch and Cable. Refer to TM 9-2320-246-20.

f. Transmission and Range Control Rod Linkages. Refer to TM 9-2320-246-20.

g. Throttle and Choke Cable. Refer to TM 9-2320-246-20

h. Starter Rope. Refer to TM 9-2320-246-20.

i. Brake and Shift Lever Support Assembly. Refer to TM 9-2320-246-20.

j. Steering Gear Assembly, Support, Shaft, and Wheel. Refer to TM 9-2320-246-20.

k. Operator's Footrest Assembly. Refer to TM 9-2320-246-20.

l. Operator's Seat Spring-Loaded Cylinder Fastener. Refer to TM 9-2320-246-20.

m. Operator's Seat. Refer to TM 9-2320-246-10.

n. Fuel Tank and Line. Refer to TM 9-2320-246-20.

o. Air Cleaner. Refer to TM 9-2320-246-20.

p. Mufflers. Refer to TM 9-2320-246-20.

q. Engine Guard. Refer to TM 9-2320-246-20.

CHAPTER 8

REPAIR OF MISCELLANEOUS COMPONENTS

Section I. ENGINE GUARD

8-1. Description

a. General. The engine guard is a welded assembly of various rods, plates, and expanded metal. It protects the engine from external elements that might cause damage to the engine and related parts.

b. Differences Among Models. The two corner end tubes of the M274A3 engine guard (fig 8-1) are secured to the right and left drop gear axle housings by two bolts (fig 8-1). All other M274 models are hooked into brackets that are bolted to the drop gear axle housings (figs 8-2 and 8-3).

8-2. Removal and Disassembly

a. Removal. Refer to TM 9-2320-246-20 for removal of engine guard from all models.

b. Disassembly.

(1) Most of disassembly is accomplished when removing guard from vehicle (refer to TM 9-2320-246-20) except for footman loop and strap assembly.

(2) Remove two 5/16-24 hexagon nuts, two 5/16-inch lockwashers, and two 5/16-24 x 7/8 machine screws securing footman loop and strap assembly. Remove this assembly from engine guard.

Note. If required, remove left (3) and right (4) bracket assemblies, securing the M274A2, M274A4, and M274A5 models to drop gear axle assemblies.

8-3. Cleaning, Inspection, and Repair

a. Cleaning. Use a drycleaning solvent or mineral spirits paint thinner to wash all parts. Remove any hard crusts that may have formed on parts, with a stiff bristle brush that has been dipped in the cleaning agent.

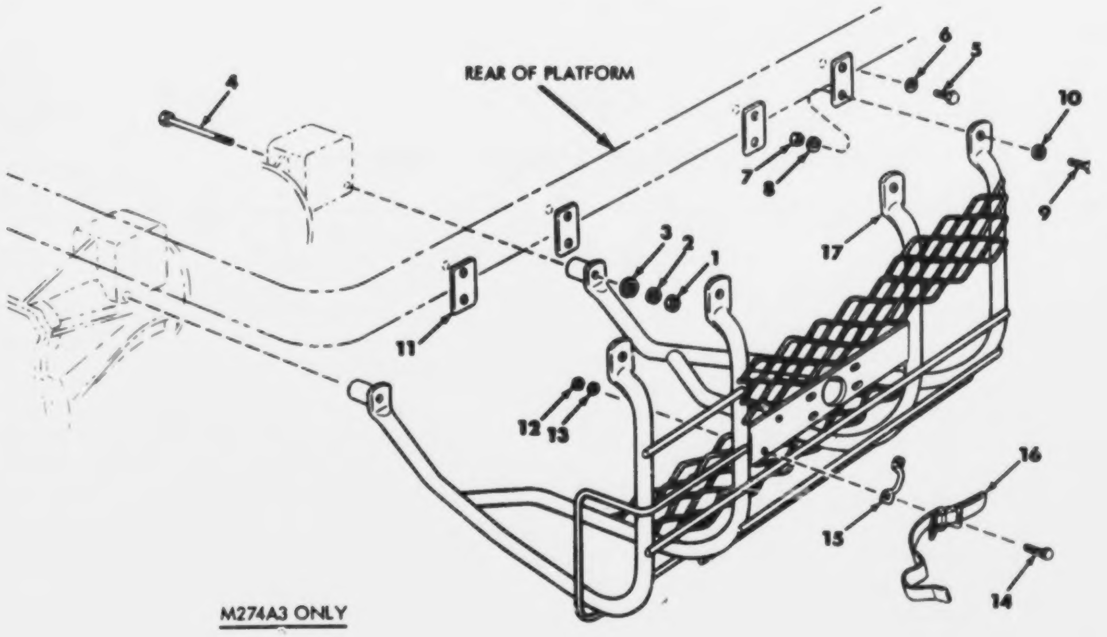
b. Inspection. Inspect engine guard for any bends, cracks, broken welds, or other signs of damage.

c. Repair. Straighten any bent parts. Weld as required. If damage to engine guard is excessive and guard is not repairable, replace it.

8-4. Assembly and Installation

a. Assembly. Reverse the above disassembly procedures.

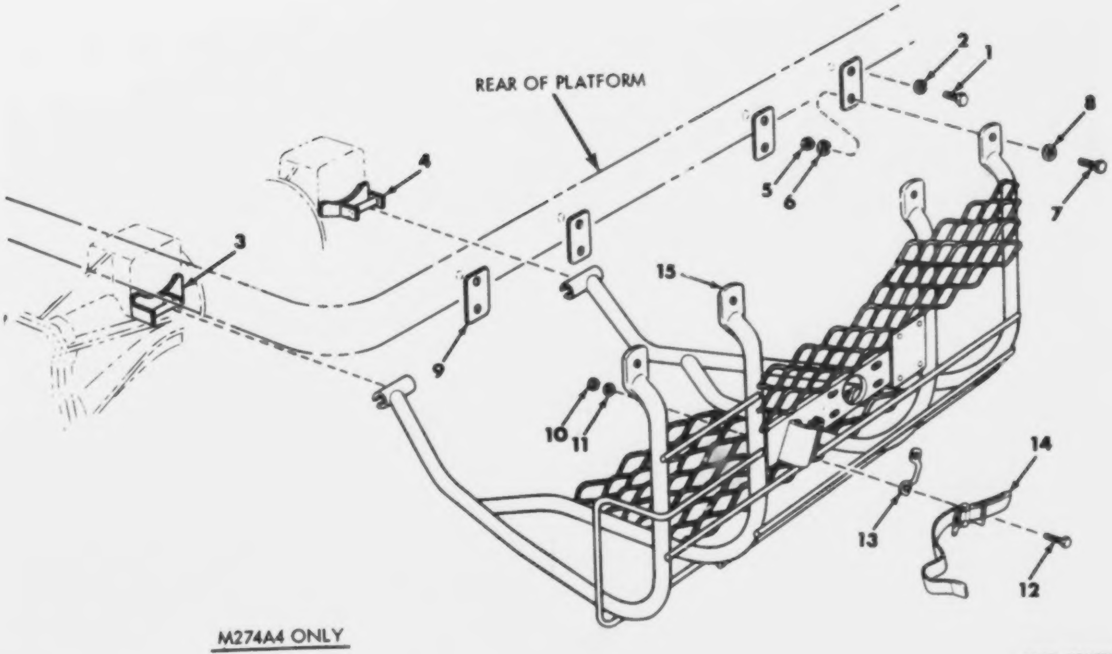
b. Installation. Refer to TM 9-2320-246-20 for installation procedures.



ORD E81738

1—7/16-20 stamped hex nut (2)—107824
2—7/16-20 plain hex nut (2)—5333811
3—7/16-inch lockwasher (2)—96906-35337-28
4—7/16-20 hex-head machine bolt (2)—187612
5—3/8-24 x 7/8 hex-head screws (4)—96906-35292-59
6—3/8 lockwasher (4)—96906-35337-27
7—3/8-24 hex nut (4)—96906-35690-628
8—3/8-inch lockwasher (4)—96906-35337-27
9—3/8-24 x 7/8 hex-head screws (4)—96906-35292-59
10—3/8-inch washer (4)—96906-27183-14
11—Plates (4)—10941274
12—10-32 hex nut (2)—120614
13—No. 10 washer (2)—96906-35337-24
14—10-32 x 5/8 hex-head screw (2)—96906-35240-73
15—Footman loop—7697591
16—Strap assembly—11592016
17—Engine guard—8687002

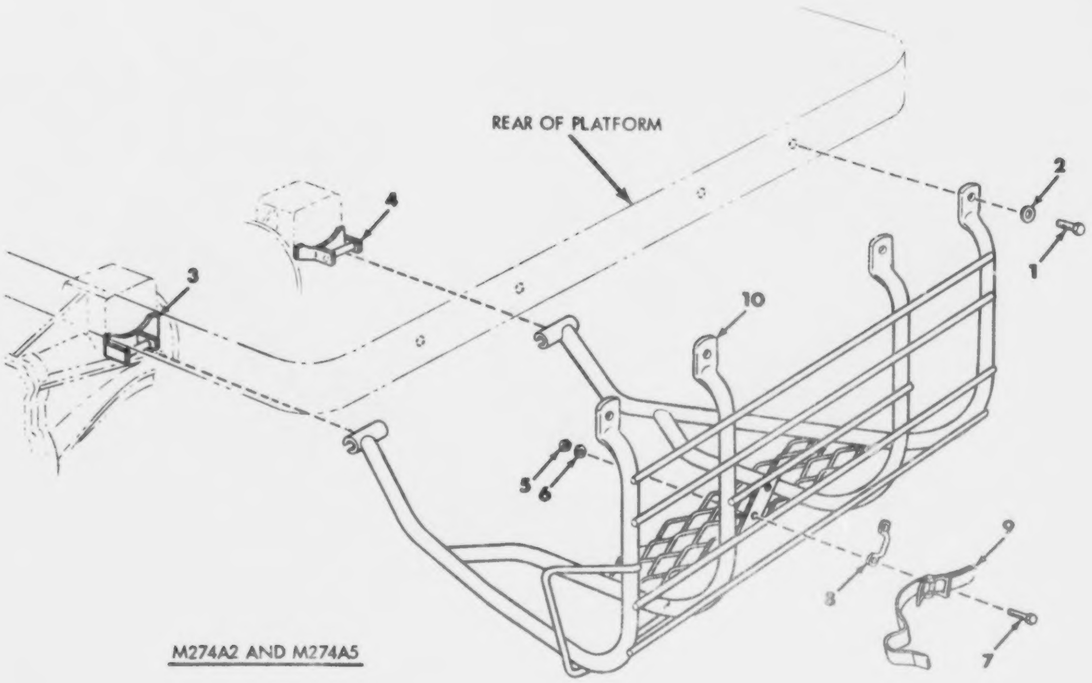
Figure 8-1. Engine guard assembly—M274A3—exploded view.



ORD E81739

1—3/8-24 x 7/8 hex-head screws (4)—96906-35292-59
2—3/8-inch washer (4)—96906-35337-27
3—Left bracket—924222
4—Right bracket—924225
5—3/8-24 hex-head nut (4)—96906-35690-628
6—3/8-inch washer (4)—96906-35337-27
7—3/8-24 x 7/8 hex-head screw (4)—96906-35292-59
8—3/8-inch flat washer (4)—96906-27183-14
9—Plates (4)—10941274
10—10-32 hex nut (2)—120614
11—No. 10 washer (2)—96906-35337-24
12—10-32 hex-head screw (2)—96906-35240-73
13—Footman loop—7697591
14—Strap assembly—11592016
15—Engine guard—10948262

Figure 8-2. Engine guard assembly—M274A4—exploded view.



ORD E81740

1—3/8-24 x 7/8 hex-head screw (4)—96906-35292-59
2—3/8-inch washer (4)—96906-35337-27
3—Left bracket—924222
4—Right bracket—924225
5—10-32 hex-head nut (2)—120614
6—No. 10 washer (2)—96906-35337-24
7—10-32 hex-head screw (2)—96906-35240-73
8—Footman loop—7697591
9—Strap assembly—11592016
10—Engine guard—10945104

Figure 8-3. Engine guard assembly—M274A2, M274A5—exploded view.

Section II. OPERATOR'S SEAT ASSEMBLY

8–5. Description

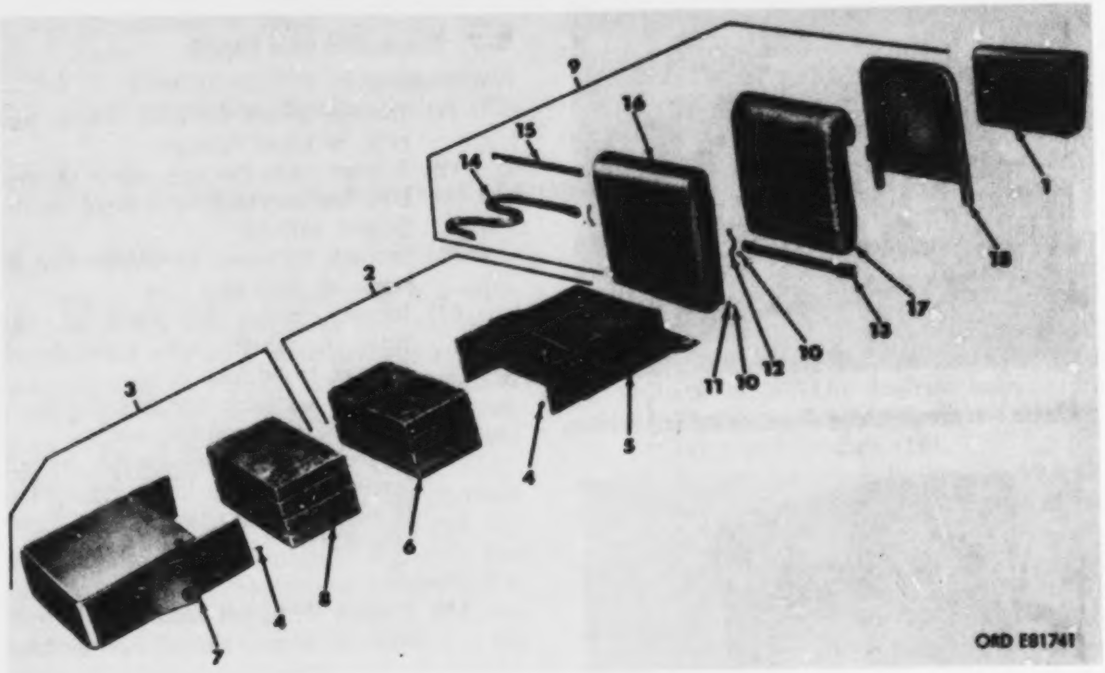
a. General. The operator's seat (fig 8–4) consists of two horizontally placed seat cushion assemblies (front half and rear half seat cushion) and a vertical seatback assembly. The seatback assembly has two legs that extend down below the rear half seat cushion, go through two grommets of the flap, and on through holes in the platform.

b. Differences Among Models. A publications bag (fig 8–4) attaches to the seatback assembly on M274A2, M274A4, and M274A5 models. The M274A3 carries no publications bag.

Note. The vehicle wheel lug wrench is stowed in the publications bag on the M274A2, M274A4, and M274A5 models.

8–6. Removal and Disassembly

a. Removal. Refer to TM 9-2320-246-10 for removal of operator's seat assembly from the vehicle.



1—Publications bag—10945087 (all models except M274A3)
2—Rear seat cushion—8686976
3—Front seat cushion—8686975
4—Clips (4)—8336280
5—Rear cushion cover—8686979
6—Rear pad—8336281
7—Front cushion cover—8686974
8—Front pad—8336281
9—Seatback assembly—10945090
10—10 x 5/8 oval-head self-tapping screws (17)—445563
11—No. 10 countersunk finishing washer (18)—96906-27129-12
12—Footman loops (2)—7697591
13—Strap assembly—8336414
14—Strap assembly—8336415
15—Seatback reinforcement—10945082
16—Seatback cover—8686977
17—Seatback pad—8336282
18—Seatback frame—10945088

Figure 8-4. Operator's seat assembly—exploded view.

b. Disassembly.

(1) *Seat cushions (front or rear).* Refer to figures 8-4 and 8-5. Slide the entire seat cushion, front (3) and rear (2), off the seatback assembly (9) legs. Separate the front seat cushion (3) from the rear (2) by disengaging four fasteners, two on each side, and three snaps each, on top and bottom cover flaps.

(2) *Seat cushions (front or rear).* Refer to figure 8-4. Disassemble the front (3) or rear half (2) seat cushion by removing two clips (4), and sliding pad (6 or 8) out of cushion assembly (2 or 3).

(3) *Vertical seatback assembly.*

(*a*) Refer to figures 8-6 and 8-4. Remove four self-tapping screws (10) securing two footman loops (12) (one loop on each side of seatback). Remove footman loops. Separate straps (13 and 14) from loops if necessary.

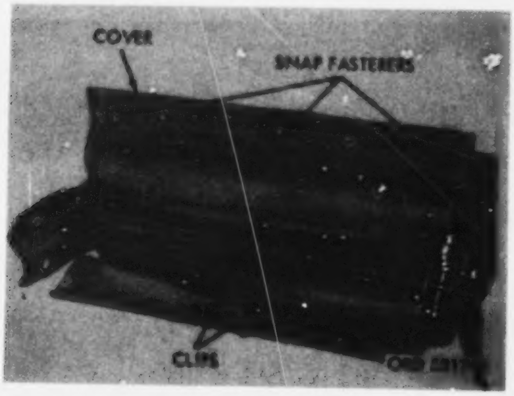

COVER
SNAP FASTENERS
CLIPS
ORD E817

Figure 8-5. Disassembling or assembling seat cushion.

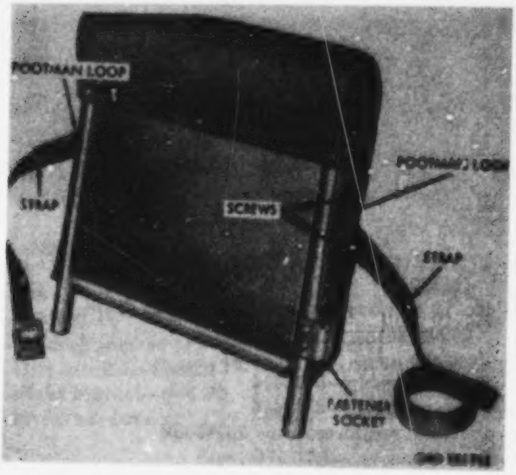

FOOTMAN LOOP
STRAP
SCREWS
FOOTMAN LOOP
STRAP
FASTENER SOCKET

Figure 8-6. Disassembling or assembling seatback (1 of 2).

Note. Remove publications bag (1, fig 8-4) from seatback assembly (9) on M274A2, M274A4, and M274A5 models.

(*b*) Refer to figures 8-7 and 8-4. Remove three self-tapping screws (10) and three finishing washers (11) securing reinforcement (15). Remove reinforcement.

(*c*) Refer to figures 8-7 and 8-4. Remove 10 self-tapping screws and 10 finishing washers from around seatback (18).

(*d*) Remove cover (16) and pad (17) (fig 8-4) from seatback (18).

8-7. Inspection and Repair

a. Inspection.

(1) Inspect covers for split seams, tears, cuts, or other damage.

(2) Inspect pads for any signs of excessive damage, especially mold or other fungus growth.

(3) Inspect fasteners on covers for any signs of damage.

(4) Inspect straps for signs of wear, tears in fabric, and especially for damage to buckle.

(5) Inspect seatback for straightness or any broken or cracked welds.

(6) Inspect the spring-loaded cylinder fastener socket on lower right corner of seatback for any signs of damage (fig 8-7).

b. Repair.

(1) Replace damaged fasteners or grommets in covers; also, sew or patch up

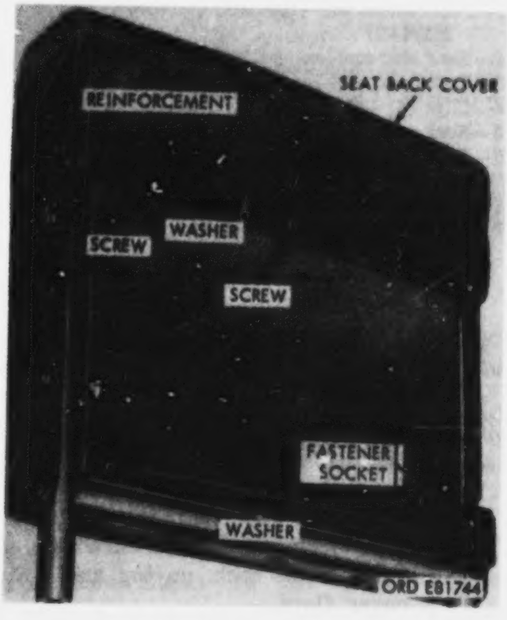

REINFORCEMENT
SEAT BACK COVER
WASHER
SCREW
SCREW
FASTENER SOCKET
WASHER
ORD E81744

Figure 8-7. Disassembling or assembling seatback (2 of 2).

any broken seams, tears, or cuts on covers.

(2) Replace cut or damaged straps.

(3) Straighten or weld damaged seat-back.

(4) If necessary, tighten or replace rivets holding cylinder fastener socket (fig 8-7).

8-8. Assembly or Installation

a. Assembly. Assembly is the reverse of disassembly. Refer to paragraph 8-6*b* and figures 8-4 through 8-7.

b. Installation. Refer to TM 9-2320-246-10 for installation of seat assembly to the vehicle.

Section III. FOOTREST ASSEMBLY AND RELATED PARTS

8-9. Description

a. General. The footrest assembly is a tube-type framework that functions both as operator's footrest and as a mounting support for the accelerator, clutch, and brake controls. For shipping purposes the assembly can be removed from its mounted position and stored under the vehicle's body.

b. Differences Among Models. The footrest on the M274A3 has a clamping bolt and clip for storage of the combination handcrank and wheel lug wrench. The footrest of the M274-A2, M274A4, and M274A5 models has two clamping bolts and a wire screen welded to the bottom of tubular framework.

Note. On M274A2, M274A4, and M274A5 models the wheel lug wrench is stowed in the publications bag on the rear of the seat.

8-10. Removal and Disassembly

a. Removal. Refer to TM 9-2320-246-10 for procedures on removing the footrest assembly from the vehicle.

b. Disassembly (fig 8-8).

(1) Remove spring pin (1) from rod end clevis (2). This removes clutch cable assembly (4) from clutch and brake pedal shaft assembly lever (23).

(2) Loosen plain hexagon nut (3) and remove rod end clevis (2) from clutch cable assembly (4).

(3) Remove plain hexon nut (3) from clutch cable assembly (4).

(4) Remove brake cable assembly (8) the same way as the clutch cable assembly (4).

(5) Remove flat washer (9) from end of throttle control cable (10).

(6) Remove throttle control cable (10) from accelerator pedal (35), slide off flat washer (9) and pull cable out of conduit (13). The self-tapping screw (11), clip (12), and conduit (13) are on M274A3 footrest only.

(7) Remove self-tapping screw (11), clip (12), and conduit (13).

(8) Remove two plain hexagon nuts (14), two lockwashers (15) and two hexagon-head capscrews (16) from footrest inner support bracket.

(9) Remove two plain hexagon nuts (17) two lockwashers (18), and two hexagon-head capscrews (19) from outer support bracket. This releases the brake and clutch pedal assemblies. Lift out of footrest frame (41).

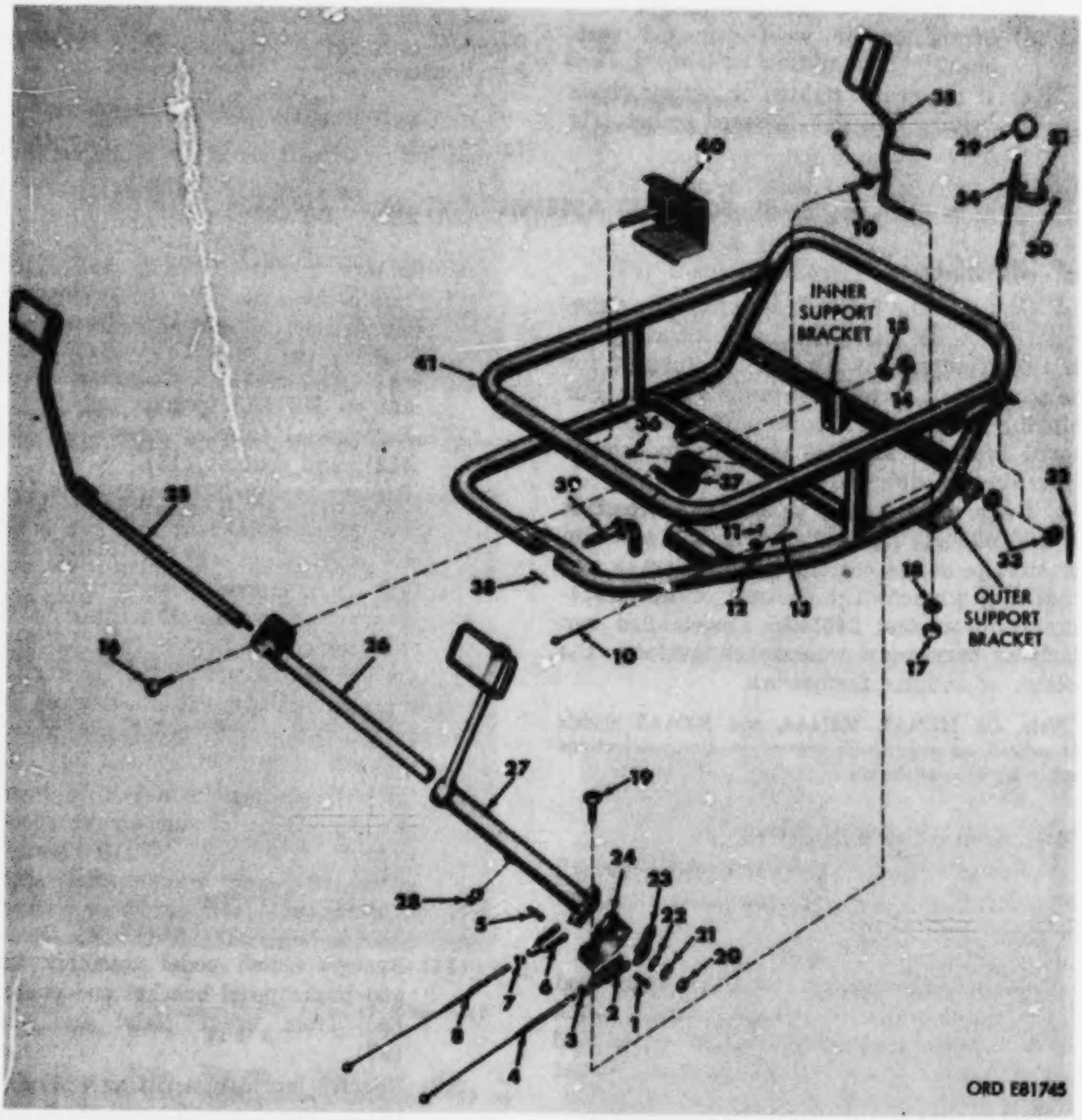
(10) Remove plain or self-locking hexagon nut (20), flat washer (21), lockwasher (22) (on M274A3 only), lever (23), and brake pedal shaft support (24) from brake and clutch pedal assemblies (25, 26, 27).

(11) Remove clutch pedal assembly (25) and brake pedal bracket and bushing (26) from brake pedal and shaft (27).

(12) Remove lubrication fitting (28) from brake assembly pedal and shaft (27).

(13) Remove throttle lever knob (29), self-locking hexagon nut (30), and spring tension clip (31) from hand throttle lever (34).

(14) Remove cotter pin (32) and flat washer (33). Slide out accelerator pedal (35) thus removing hand throttle lever (34) and another flat washer (33).


40
39
9
10
29
31
34
30
INNER SUPPORT BRACKET
41
15
14
36
37
25
30
11
38
12
13
10
18
17
32
33
OUTER SUPPORT BRACKET
16
26
27
19
24
23
22
21
20
28
5
6
7
8
3
2
1
4
ORD E81745

1—Spring pin—7380079
2—1/4-28 rod end clevis—96906-35812-2
3—1/4-28 plain hex nut—96906-35690-425
4—Clutch cable assembly—7055672
5—Spring pin—7380079
6—1/4-28 rod end clevis—96906-35812-2
7—1/4-28 plain hex nut—96906-35690-425
8—Brake cable assembly—7966497
9—No. 10 flat washer—96906-27183-8
10—Throttle control cable
—7966825 (M274A3 only)
—11592083 (all models except M274A3)
11—10-32 x 3/8 self-tapping screw—163210 (M274A3 only)
12—Clip—120520 (M274A3 only)
13—Conduit—8336129 (M274A3 only)

Figure 8-8. Footrest assembly and related parts—exploded view.

14—5/16-24 plain hex nut (2)—96906-35690-525
15—5/16-inch lockwasher (2)—96906-35337-26
16—5/16-24 x 3/4 hex-head capscrew (2)—96906-35292-32
17—5/16-24 plain hex nut (2)—96906-35690-525
18—5/16-inch lockwasher (2)—96906-35337-26
19—5/16-24 x 11/16 hex-head capscrew (2)—123480
20—5/16-24 plain hex nut—96906-51922-13 (M274A3 only)
5/16-24 self-locking hex nut—442826 (all models except M274A3)
21—5/16-inch flat washer—96906-27183-12
22—5/16-inch lockwasher—96906-35337-26 (M274A3 only)
23—Lever—7966615
24—Brake pedal shaft support—7966935
25—Clutch pedal assembly—7966613
26—Brake pedal bracket and bushing—7966939
27—Brake assembly pedal and shaft—7045694
28—1/4-28 lubrication fitting—96906-15001-4
29—Throttle lever knob—8687091
30—5/16-24 self-locking hex nut—508345
31—Spring tension clip—7966773
32—3/32 dia x 3/4 cotter pin—121222
33—3/8-inch flat washer (2)—96906-15795-214
34—Hand throttle lever—7966772
35—Accelerator pedal—7045776
36—Self-tapping screw (2)—9404740 (M274A3 only)
37—Handcrank clip—8336225 (M274A3 only)
38—1/8 dia x 7/8 spring pin—96906-9048-106
39—Clampscrew—8336288 (M274A3 only)
11592027 (All models except M274A3)
40—Bracket and clampscrew—11591999 (all models except M274A3)
41—Footrest frame—7049702 (M274A3 only)
1159206 (all models except M274A3)

Figure 8-8—Continued.

(15) Remove spring pin (38) from clampscrew (39). Remove clampscrew from footrest frame (41). (On all models.)

(16) Remove bracket and clampscrew (40) from footrest frame (41). (On all models except M274A3.)

(17) If required for inspection and repair purposes, remove spring pin (38) and clampscrew (39) from footrest (41).

Note. Part item (40) is the corresponding clampscrew (refer to 17 above) on the M274A2, M274A4, and M274A5 models.

8-11. Cleaning, Inspection and Repair

a. Cleaning. Use a drycleaning solvent or mineral spirits paint thinner to wash all parts. Remove any hard crusts that have formed, with a stiff bristle brush that has been dipped in the cleaning agent.

Note. All key numbers indicated below refer to figure 8-8.

b. Inspection.

(1) Inspect footrest frame (41) for bends, dents, or other signs of damage to tubing or brackets. Also inspect for broken welds.

(2) Inspect accelerator pedal (35), clutch pedal assembly (25), brake assembly pedal and shaft (27), brake pedal bracket and bushing (26), and hand throttle lever assembly (34) for any signs of bends, dents, or broken welds.

(3) Inspect brake pedal shaft support (24), clutch pedal assembly (25), and rod end clevis (2 and 6) for bends or cracks. Inspect threads and spring pin holes in clevises for signs of damage.

(4) Inspect clutch cable assembly (4), brake cable assembly (8), and throttle control cable (10) for kinks or damage to ball ends or threaded ends.

(5) Inspect spring tension clip (31) for bends, cracks, or other signs of damage. Make certain that spring tension clip is of proper shape and strength to prevent hand throttle lever (34) from slipping on the sector because of vehicle vibration.

c. Repair.

(1) Straighten bent tubing of footrest framework. Weld any cracked or broken welds.

(2) Straighten or weld damaged pedal or lever assemblies.

(3) Use tap or die to repair any damaged threads in clevises (2 and 6) or linkages (4 and 8).

8-12. Assembly and Installation

a. Assembly. Assemble the footrest by reversing those procedures for disassembly in paragraph 8-10*b* and figure 8-8.

b. Installation. Refer to TM 9-2320-246-10 for installation of footrest to the vehicle.

Section IV. PROPELLER SHAFT

8–13. Description

The tubular-type propeller shaft has a universal joint at both ends. The front end has a yoke that bolts to the companion flange and brakedrum. The rear end has a splined yoke assembly that slides onto the splined drive pinion in the transmission.

8–14. Removal and Disassembly

a. Removal. Refer to TM 9–2320–246–20 for removal of propeller shaft from the vehicle.

b. Disassembly. Refer to TM 9–2320–246–20 for disassembly of propeller shaft.

8–15. Cleaning, Inspection, and Repair

a. Cleaning. Use a mineral spirits paint thinner or a drycleaning solvent to wash all parts. Remove any hard crusts that have formed on the shaft by using a still bristle brush dipped in the cleaning agent. Be sure to dry parts with dry compressed air.

***Caution:* Bearings must not be dried or spun with compressed air. Refer to TM 9–214 for proper care and maintenance of bearings.**

***Note.* Key numbers called out in *b* below refer to those in figure 8–9.**

b. Inspection (fig. 8–9).

(1) Inspect shaft (11) for straightness or dents.

(2) Inspect yoke (4) and yoke assembly (9) for any signs of distortion.

(3) Inspect yoke splines (14) for burs, nicks, or scratches.

(4) Inspect bearing assemblies (2 and 7) and journals (3 and 8) for roughness, and against those limits specified for repair standards in paragraph 8–16.

c. Repair. Minor nicks or burs on splines in yoke may be removed with a fine mill file. Use a crocus cloth to remove any rough spots on surfaces of journals.

8–16. Repair Standards

a. General. Refer to paragraph 4–11 and Table 8.

b. Propeller Shaft Assembly.

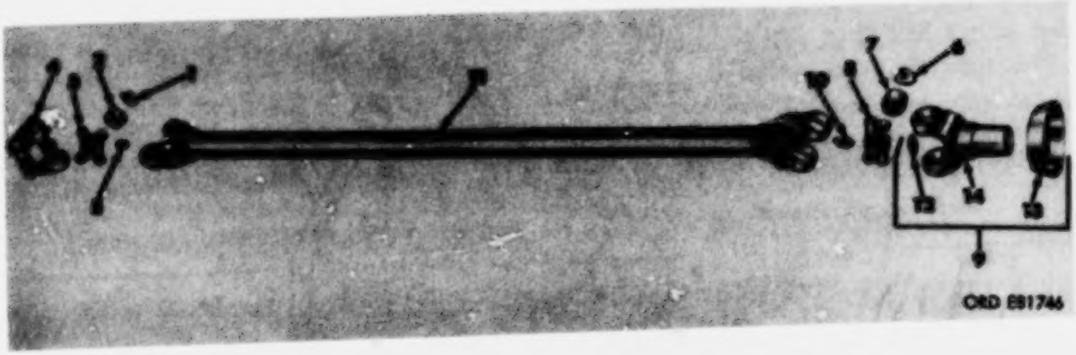
Table 8. Propeller Shaft Repair Standards

Fig No.	Ref Number	Point of measurement	Size and fit of new parts	Wear limits
8–9	2 & 7	Diameter of journal bearings.	0.5055 to 0.5060	0.5050
	2 & 7	Inside diameter of bearing assembly.	0.5062	•
	2 & 3	Fit of journals in bearings.	0.00021 to 0.00071	0.00121

8–17. Assembly and Installation

a. Assembly. Refer to TM 9–2320–246–20 for assembly of propeller shaft.

b. Installation. Refer to TM 9–2320–246–20 for installation of propeller shaft to the vehicle.



1—Retaining ring (4)—8333675
2—Bearing assemblies (4)—7966733
3—Journal—7966737
4—Yoke—7993028
5—1/4-27 x 90° lubrication fitting—96906-15001-4
6—Retaining ring (4)—833675
7—Bearing assemblies (4)—7966738
8—Journal—7966737
9—Yoke assembly—7966735
10—Lubrication fitting—96906-15001-4
11—Shaft
—10946844
—7966678 (M274A3 only)
12—Plug—7789743
13—Shield—7966745
14—Yoke—7966736

Figure 8-9. Propeller shaft assembly—exploded view.

Section V. BRAKE AND SHIFT LEVER SUPPORT ASSEMBLY

8-18. Description

The brake, transmission, and range gearshift levers are mounted at the front of the vehicle on the shaft of a support assembly.

8-19. Removal and Disassembly

a. Removal. Refer to TM 9-2320-246-20 for removal of brake and shift lever support assembly from the vehicle.

b. Disassembly. Refer to TM 9-2320-246-20 for disassembly of brake and shift lever support assembly.

8-20. Cleaning, Inspection, and Repair

a. Cleaning. Use a drycleaning solvent or a mineral spirits paint thinner to wash all components. Remove any hard crusts that may have formed on brake and shift lever support parts, with a stiff bristle brush that has been dipped in cleaning agent. Dry all parts with compressed air.

Note. All key numbers used in *b* below are found in figure 8-10.

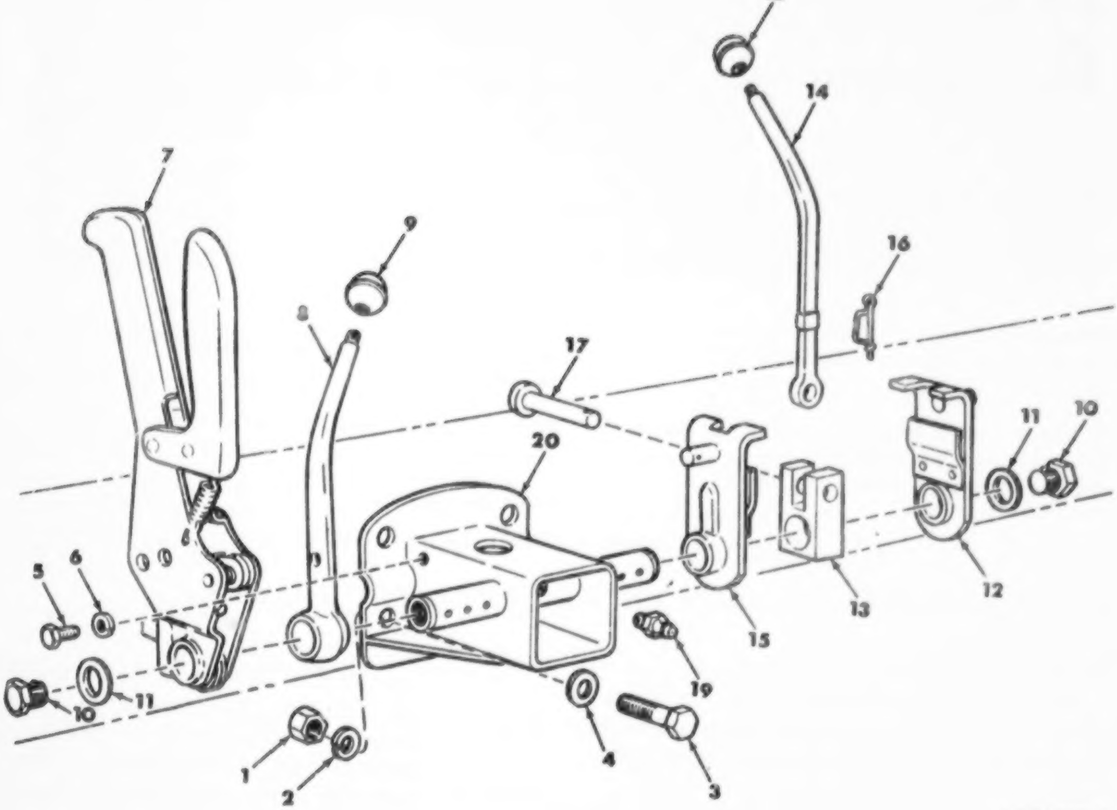
b. Inspection (fig 8-10).

(1) Inspect the handbrake lever assembly (7) for straightness or dents. Make sure that teeth of handbrake lever ratchet are not damaged or excessively worn. Also inspect bore of lever for limits specified in repair standards of paragraph 8-21 and figure 8-10. Inspect latch spring for any breaks or excessive distortions.

(2) Inspect transmission gearshift lever (8) for signs of dents or cracks. Also inspect bore of this lever according to those limits specified in repair standards of paragraph 8-21 and figure 8-10.

(3) Inspect the support assembly (20) itself for signs of cracks or broken welds. Also inspect the shaft according to those limits specified in repair standards of paragraph 8-21 and figure 8-10.

(4) Inspect bores of both range gearshift lever brackets (12 and 15), and bore



ORD E81747

1—3/8-24 hex nuts (4)—96906-20365-624C
2—3/8-inch lockwashers (4)—96906-35338-46
3—3/8-24 x 2-1/2 hex-head capscrews (4)—96906-
 90726-68
4—3/8-inch flat washer (4)—96906-27183-14
5—3/8-16 x 5/8 hex-head capscrew—96906-90725-
 57
6—3/8-inch lockwasher—96906-35338-46
7—Handbrake lever assembly—7966769
8—Transmission gearshift lever—7966634
9—Shift lever knob—8687091
10—1/2-20 x 5/8 hex-head bolt—10929924 (all
 models except M27A3)
11—1/2-inch flat washer—96906-27183-18
12—Gearshift lever bracket
 —11591952
 —7966671 (M274A3 only)
13—Lever pivot block—8336176
14—Range gearshift lever—7966633
15—Gearshift lever bracket
 —11591953-2
 —7966671 (M274A3 only)
16—Clip (2)—8332074
17—Headed straight pin
 —96906-20392-4C33 (M274A2 and M274A5)
 —7966676 (M274A3 and M274A4)
18—Shift lever knob—8687091
19—1/8-27 straight lubrication fitting—96906-
 15003-1
20—Support assembly
 —11592004
 —8336039 (M274A3 only)

Figure 8-10. Brake and shift lever support assembly—exploded view.

of the lever pivot block (13) according to those wear limits specified in paragraph 8-21 and figure 8-10. Also inspect bracket pins for any looseness according to those limits specified in paragraph 8-21 and figure 8-10.

(5) Inspect the range gearshift lever (14) for bends, dents or cracks. Also inspect the bore in this shift lever and the headed straight pin (17), according to those wear limits specified in paragraph 8-21 and figure 8-10.

c. *Repair.*

(1) If handbrake lever assembly is distorted out of shape, replace it.

(2) If there are cracks or broken welds in the support, repair them.

8-21. Repair Standards

Table 9. Repair Standards

Fig No.	Ref No.	Point of measurement	Size and fit of new parts	Wear limits
8-10	7	Inside diameter of bore in handbrake lever assembly	0.756 to 0.760	0.765
	8	Inside diameter of bore in transmission gearshift lever.	0.749 to 0.751	0.760
	20	Diameter of shafts on support assembly.	0.746 to 0.748	0.740
	7-20	Fit of lever on shaft.	0.006L to 0.014L	0.025L
	8-20	Fit of lever on shaft.	0.001L to 0.005L	0.020L
	12-15	Diameter of pins on gearshift lever brackets.	0.3089 to 0.3094	0.308
	13	Inside diameter hole in lever pivot block.	0.3115 to 0.3135	0.314
	14	Inside diameter bore in range gearshift lever.	0.3115 to 0.3135	
	17	Diameter of headed straight pin.	0.3105 to 0.3120	0.309
	13-17	Fit of block on pin.	0.005T to 0.003L	0.005L
	14-17	Fit of lever on pin.	0.005T to 0.003L	0.005L
	12-15	Inside diameter of bore in gearshift lever brackets.	0.750 to 0.755	0.760
	12,15-20	Fit of bracket on shaft.	0.002L to 0.009L	0.020L
	13	Inside diameter of bore in lever pivot block.	0.749 to 0.751	0.755
	13-20	Fit of block on shaft.	0.001L to 0.005L	0.015L

8-22. Assembly and Installation

a. *Assembly.* Refer to TM 9-2320-246-20 for assembly of brake and shift lever support.

b. *Installation.* Refer to TM 9-2320-246-20 for installation of brake and shift lever support assembly to the vehicle.

Section VI. STARTER CABLE PULLEY AND RELATED PARTS

8-23. Description

The starter cable pulley is a grooved, circular pulley that is enclosed by the pulley housing. This housing is secured at the top of the rear flange of the right frame tube (7, fig 7-1). Access to this housing is usually made through the engine access lid cover. There is a metal conduit enclosing and protecting the cable underneath the platform. This pulley functions as an idler to change the axial direction of starter cable 90 degrees from across the vehicle to lengthwise on the vehicle.

8-24. Removal and Disassembly

a. Removal. Refer to TM 9-2320-246-20 for removal of starter cable pulley and related parts from the vehicle.

b. Disassembly.

(1) Most of disassembly of starter cable pulley is performed when removing this assembly and related parts from the vehicle.

(2) Refer to paragraph 7-4*c* (8), figures 7-14 through 7-17, for removal of the metal conduit and for explanation of differences between early and late models.

(3) Refer to figure 8-12. Use arbor press to remove bushing (10, fig 8-11) from inner diameter of pulley (11, fig 8-11).

(4) Refer to figure 8-13. Pull the guides (15 and 16, fig 8-11) from housing and remove pipe plug (14, fig 8-11) if this is necessary for inspection and repair purposes.

(5) Inspect bolt (7) to those same repair limits in paragraph 8-26 and figure 8-11.

(6) Inspect the cover (5) for flatness. Also inspect the pulley (11) for any burs or nicks.

c. Repair.

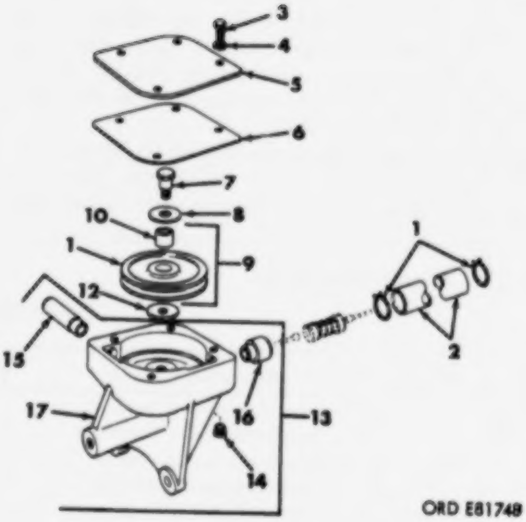
(1) If there are cracks in pulley, they can be repaired by welding. Damaged threads can be corrected with a tap. Remove any burs or nicks from pulley with a fine mill file.

(2) If bushing (10) in pulley (11) is beyond limits specified, remove bushing as shown in figure 8-12, installing a new one by reversing the removal procedures.

8-25. Cleaning, Inspection, and Repair

a. Cleaning. Clean all the parts in a dry-cleaning solvent or mineral spirits paint thinner. Dry parts with compressed air.

Note. All key numbers used in *b* below are found in figure 8-11.



1—Hose clamps (2)—8716926
2—Rubber tubing seal—10941198
3—Capscrews (4)—96906-35291-3
4—Lockwashers (4)—96906-35337-25
5—Cover—8336115
6—Gasket—8336114
7—Bolt—8336125
8—Flat washer—8687087
9—Pulley assembly—8336110
10—Bushing—8687088
11—Pulley—8336109
12—Flat washer—8687086
13—Pulley housing assembly—10941139
14—Pipe plug—96906-49005-2 (M274A3 and M274A4 only)
15—Guide—10941140
16—Guide—8336112
17—Pulley housing—10941138

Figure 8-11. Starter cable pulley and related parts—exploded view.

b. Inspection.

(1) Inspect pulley housing (17) for cracks or damaged threads in the mounting hole.

(2) Inspect guides (15 and 16) and pipe plug (14) in housing for looseness or damage.

(3) Inspect bushing (10) in pulley (9) according to those limits specified in repair standards in paragraph 8-26 and figure 8-11.

(4) Refer to figure 8-13. If replacement of guides (15 and 16) and pipe plug (14) is required, remove these parts as shown in figure 8-13. Install new parts by reversing the removal procedure.

(5) If any parts require replacement in the earlier M274A3 models, make sure to replace with parts for later M274A3 models. Check paragraph 7-4*c*(8) and figure 7-15 for related parts of early and late models.

c. Repair. See TM 9-2320-246-20.

8-26. Repair Standards

Table 10. Repair Standards

Fig No.	Ref No.	Point of measurement	Size and fit of new parts	Wear limits
8-11	10	Inside diameter of pulley bushing.	0.499 to 0.500	0.504
	7	Diameter of bolt.	0.495 to 0.497	0.490
	10 & 7	Fit of bearing onto bolt.	0.002L to 0.005L	0.014L

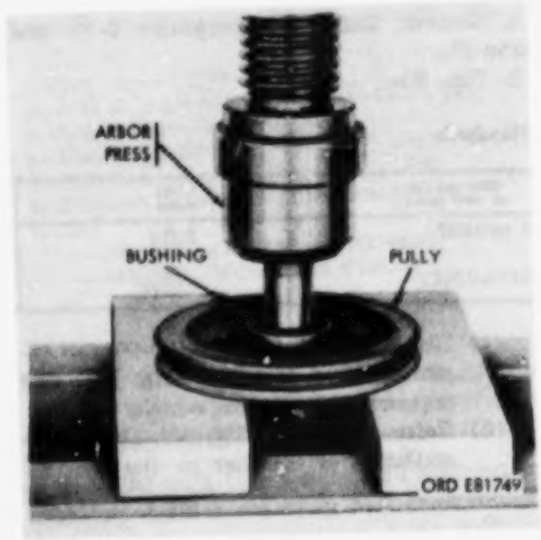


Figure 8-12. Removing or installing pulley bushing.

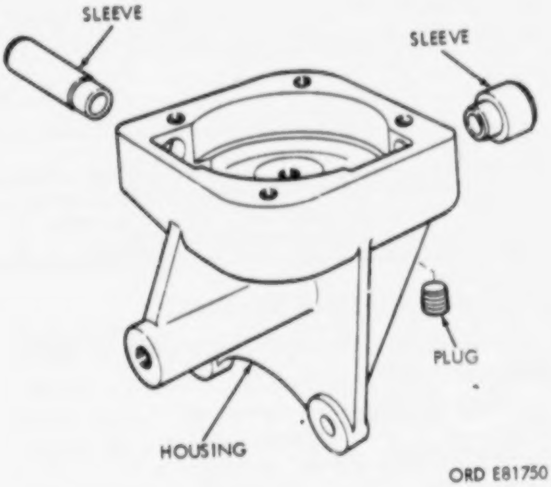


Figure 8-13. Removing or installing guides and pipe plug.

8-27. Assembly and Installation

a. Assembly. Refer to TM 9-2320-246-20 for assembly of starter cable pulley and related parts. Refer to figures 8-12 and 8-13 to assemble pipe plug (14, fig 8-11) and guides (15 and 16, fig 8-11) to the housing (17, fig 8-11), and pulley bushing (10, fig 8-11) to the pulley assembly (9, fig 8-11). Refer to paragraph 7-4 and figures 7-16 and 7-17 for assembly of metal conduit.

b. Installation. Refer to TM 9-2320-246-20 for completing procedures of installing starter cable pulley and related parts to the vehicle.

Section VII. TOW BAR

8-28. Description

The tow bar is of tubular, all-welded construction. When not in use it is stowed underneath and cross-ways near the rear of vehicle platform. It is mounted at one end to a support; at the other end it is mounted to a bracket.

8-29. Removal and Disassembly

a. Removal. Refer to TM 9-2320-246-10 for removal of tow bar from the vehicle. Refer to TM 9-2320-246-20 for removal of the tow bar support and bracket.

b. Disassembly. There is not further disassembly of the tow bar bracket and support.

8-30. Cleaning, Inspection, and Repair

a. Cleaning. Wash all parts of the two bar, support, bracket, and attaching parts with a drycleaning solvent or a mineral spirits paint thinner. Dry all parts with compressed air.

b. Inspection (fig 8-14).

(1) Inspect tow bar (1) for bends, dents, or cracks. Also inspect welds for breaks.

(2) Inspect clevis pin hole near end of tow bar (1) according to those limits specified for repair standards in paragraph 8-31 and figure 8-14.

(3) Inspect tow bar clip (7) and support (12) for dents or broken welds.

c. Repair.

(1) Straighten or weld damaged tow bar (1).

(2) Straighten or weld damaged tow bar clip (7) or support (12).

8-31. Repair Standards

a. General. Refer to paragraph 4-11 and Table 11.

b. Tow Bar.

Table 11. Repair Standards

Fig No.	Ref No.	Point of measurement	Size and fit of new parts	Wear limits
8-14	1	Inside diameter of clevis pin hole.	0.497 to 0.507	0.510
		Fit of tow bar on clevis pin.	0.0011 to 0.0161	0.0256

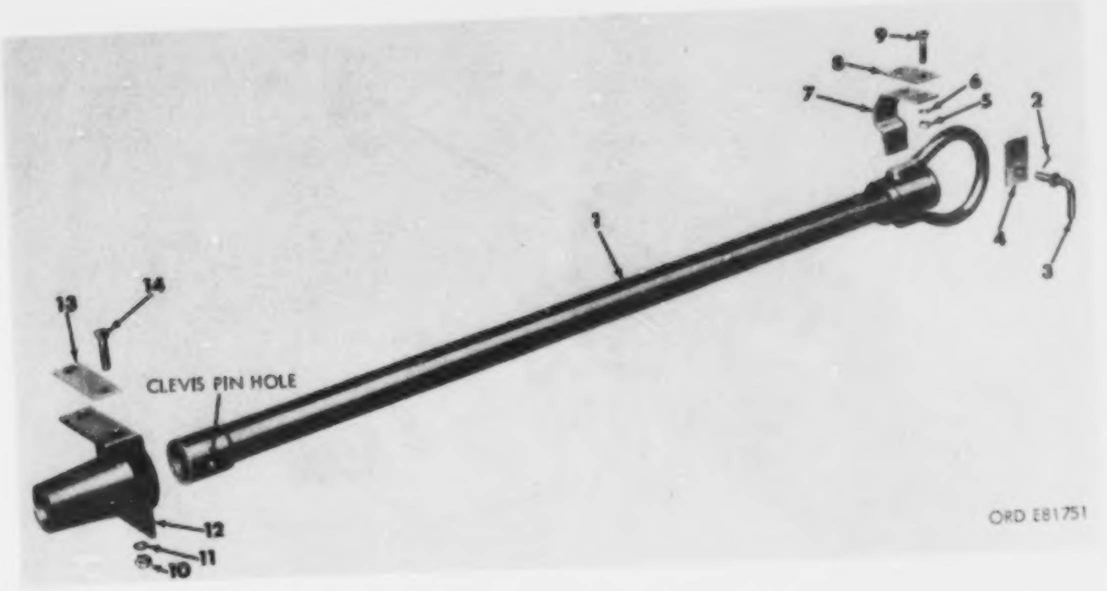
8-32. Assembly and Installation

a. Assembly. Assembly is the same as installation.

b. Installation.

(1) Refer to TM 9-2320-246-20 for installation of tow bar clip (7) and support (12) to the vehicle.

(2) Refer to TM 9-2320-246-10 for installation of tow bar to the vehicle.



1—Tow bar—8336026
2—3/32 dia x 3/4 cotter pin—96906-24665-283
3—Screw clamp—8686998
4—Plate—7049686
5—5/16-24 hex nuts (2)—96906-35690-525
6—5/16-inch lockwashers (2)—96906-35338-45
7—Clip
  —10941200—(M274A2 and M274A5)
  —8686999—(M274A3 and M274A4)
8—Shim (2)—8336358
9—5/16-24 x 1-1/2 machine screws (2)—96906-35191-310
10—5/16-24 hex nuts (2)—96906-35690-525
11—5/16 lockwashers (2)—96906-35337-26
12—Support—8336289
13—Shim (2) 8336359
14—5/16-24 x 1-1/2 machine screws (2)—96906-35191-310

Figure 8-14. Tow bar and attaching parts—exploded view.

Section VIII. FUEL TANK

8-33. Description

The fuel tank is a welded and soldered unit that has a filter assembly and gage rod. The tank contains a maximum of eight gallons of fuel.

8-34. Removal and Disassembly

a. Removal. Refer to TM 9-2320-246-20 for removal of fuel tank from vehicle.

b. Disassembly. Refer to TM 9-2320-246-20 for disassembly of fuel tank.

8-35. Cleaning, Inspection, and Repair

a. Cleaning. Use a drycleaning solvent or a mineral spirits paint thinner to wash all components. Remove any hard crusts that have accumulated, by using a stiff bristle brush dipped in cleaning agent.

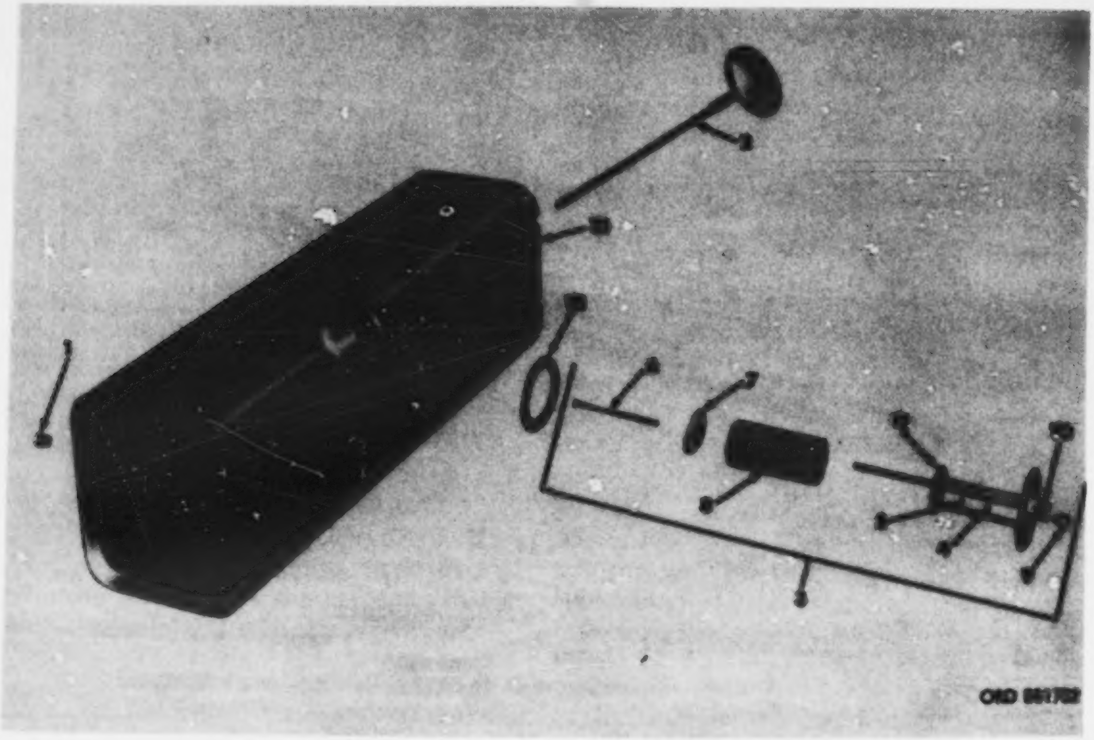
Note. All key numbers used in *b* below refer to those numbers in figure 8-15.

b. Inspection (fig 8-15).

Warning: **Either inspect fuel tank in daylight, or use a vapor-resistant light at dusk or in darkness.**

(1) Inspect tank (13) for dents, cracks, or other possible leak sources. Also inspect soldered joint or weld points for breaks.

(2) Inspect gage rod (2) for signs of bends or other damage. Make certain that cap fits securely on filler opening of tank.



1—1/4-inch pipe plug—127951
2—Gage rod—8744123
3—Filter assembly—7966969 (M274A3 only)
  Filter assembly—11592072
4—10-24 hex nuts (2)—120361
5—No. 10 split lockwashers (2)—96906-35337-24
6—10-24 x 4 roundhead machine screw—7351317
7—End plate—8686940
8—Filter element
  —7351316 (M274A3 only)
  —10946842
9—90° elbow—137419 (opt 224193)
10—90° elbow—8336088
11—Cover plate and tube assembly
  —8336095 (M274A3 only)
  —11592068
12—Gasket—7966662
13—Fuel tank—8336101

Figure 8-15. Fuel tank, filter, and related parts—exploded view.

(3) Inspect the filter element (8) for excessive sludge, dirt, or signs of damage.

c. *Repair.*

Warning: **Prepare fuel tank before repairing, to safeguard against explosion. Refer to TM 9-237.**

(1) Repair tank by welding in accordance with TM 9-237, as necessary.

(2) Straighten bent gage rod (2) if possible.

8-36. Assembly and Installation

a. *Assembly.* Refer to TM 9-2320-246-20 for assembly of fuel tank.

b. *Installation.* Refer to TM 9-2320-246-20 for installation of fuel tank to the vehicle.

Section IX. WHEELS AND TIRES

8-37. Description

The wheels on the M274A5 model are aluminum. The wheels on all other models are permanent mold castings of magnesium alloy. They are the drop-center type, 10 x 5.50F, and fastened to wheel hub studs by self-locking nuts. The tires have inner tubes and tire liners, and are a special lightweight, military type 7.50-10 with nondirectional treads.

8-38. Removal

Refer to TM 9-2320-246-20 for removal of tires from the vehicle.

8-39. Inspection and Repair

a. Inspection (fig 8-16).

(1) Inspect wheels for bends or cracks. Also inspect edges of wheel rims for burs or nicks (edges should be concentric with the hubs).

(2) Refer to TM 9-1871 for additional instructions on tire and tube inspection.

b. Repair.

(1) Minor bends in wheels can be straightened.

(2) Refer to TM 9-1871 for information on repairing tires and tubes (fig 8-16).

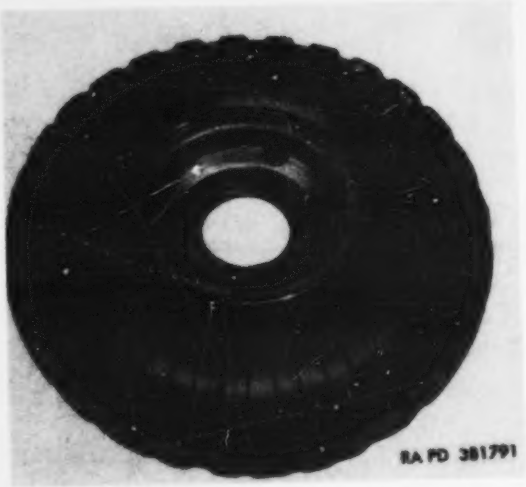


Figure 8-16. The tire mounted on the wheel.

8-40. Installation

Refer to TM 9-2320-246-20 for installation of tires and wheels to the vehicle.

CHAPTER 9

MATERIALS USED IN CONJUNCTION WITH MAJOR ITEM

Section I. GENERAL

9-1. Scope

This chapter provides descriptions, data, and installation procedures for the Armament Kit and Litter Kit on the M274 series vehicles.

Section II. ARMAMENT KIT

9-2. General

a. This section provides for preparation of vehicle for installation, removal, repair, and installation of the armament kit.

b. The armament kit provides for the adaptation of M274 series vehicles for installation of the 106-MM rifle.

9-3. Preliminary Operations Before Installation of Armament Kit

a. Turn off the ignition switch and close crankcase breather valves, fuel line shutoff valve, and close fuel filler cap vent valve. On vehicle engines equipped with a fuel primer pump, close primer line shutoff valve (see TM 5-2805-213-14).

b. Hoist vehicle over on left side (driver's side), resting on the sidewalls of the tires.

c. Remove footrest retaining clips from the right chassis tube (fig 9-1).

Note. Diagram views shown on figures 9-2, 9-5, 9-6, and 9-7 should be used as supplements to, and not replacements of views shown on Installation Drawing 7049746, sheets 1 and 2.

d. Locate new set of attaching holes for new position of footrest retaining clips from the existing attaching holes, locate dimensions 7-1/2 (7.50) and 18-5/8 (18.62), and drill 13/32 (.41) dia four holes through (fig 9-2).

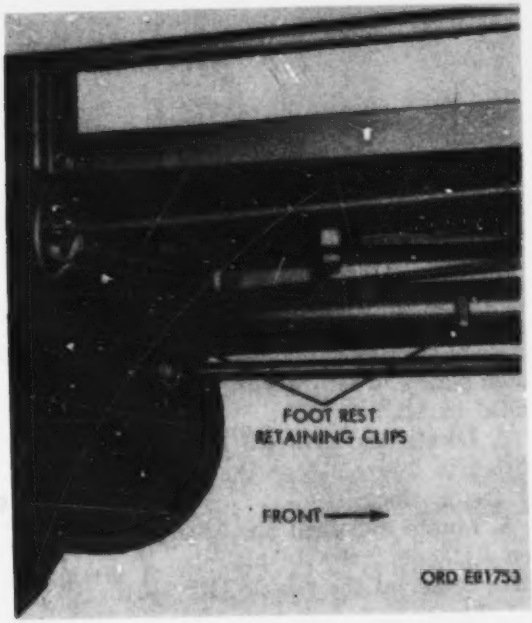


Figure 9-1. Footrest retaining clip locations.

e. Remove and discard M274A3 series vehicle rifle hole cover. The hole for the new cover must be 8-11/16 inches in diameter; modify vehicle accordingly if required.

f. Remove and discard catch lock from platform (M274A3 only) by drilling out two

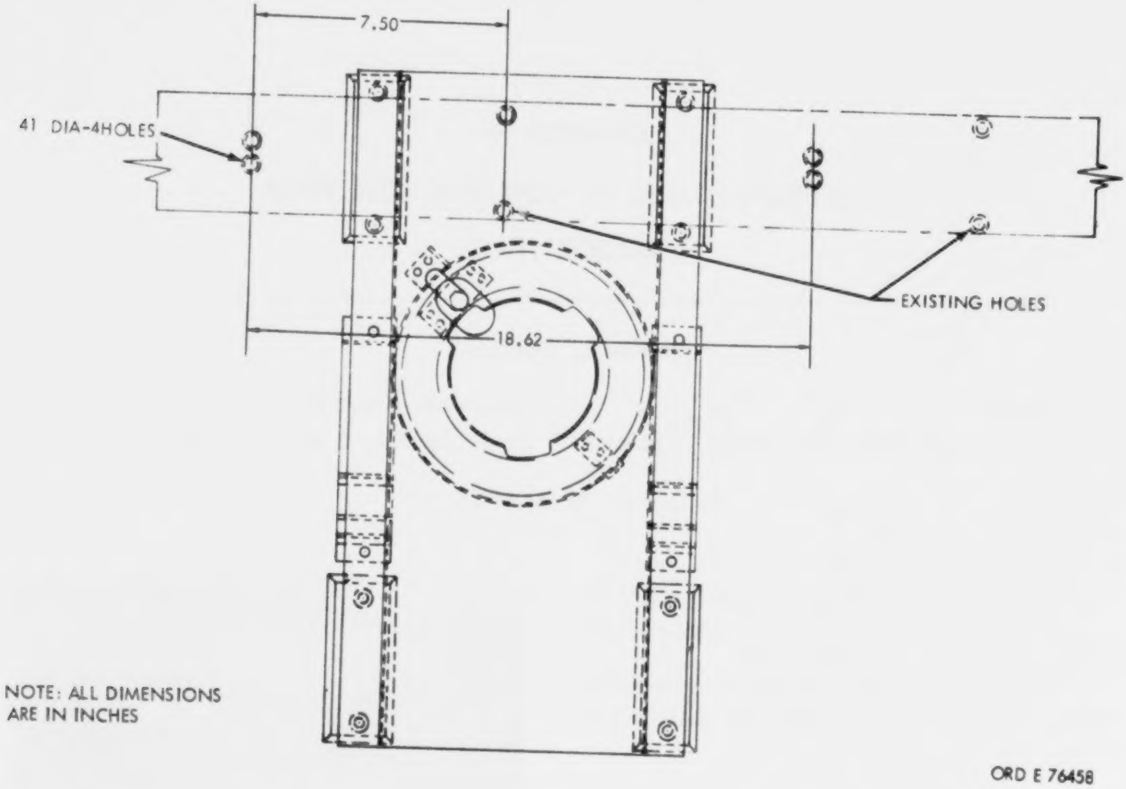


Figure 9–2. Locating drill holes for footrest retaining clips.

rivets. Drill two larger holes using 0.191 drill in same location (fig 9–4). Install new cover latch plate and secure with two new rivets provided in kit.

g. Locate and drill six 0.340-dia holes as shown in figure 9–5, in the right front corner of the platform.

h. Locate and drill six 0.340-dia holes and ten 0.220-dia holes in platform at the right-hand center of the vehicle (fig 9–6).

i. Locate and drill two 0.220-dia holes and eight 0.410-dia holes toward rear of vehicle as shown in figure 9–7.

j. Pull vehicle down on all four wheels.

Note. The procedure in step *k* below shall be accomplished only if vehicle configuration requires it.

k. Remove rear handrail assembly from the platform and cut off inner flange of left side of platform mounting bracket as shown in figure 9–8.

l. Locate and drill one 0.440-dia hole on left rear edge of platform as shown in figure 9–8.

m. Locate and drill two 0.220-dia holes in engine brush guard as shown on installation drawing.

n. All drilled holes to be brushed prime-painted Spec TT–P–666A before assembly of armament kit parts to vehicle.

o. Preparation of the vehicle for installation of the armament kit is now completed. Refer to paragraph 9–5 for installation procedures.

9–4. Removal of Armament Kit Components

Repair or replacement of armament kit components is accomplished as follows:

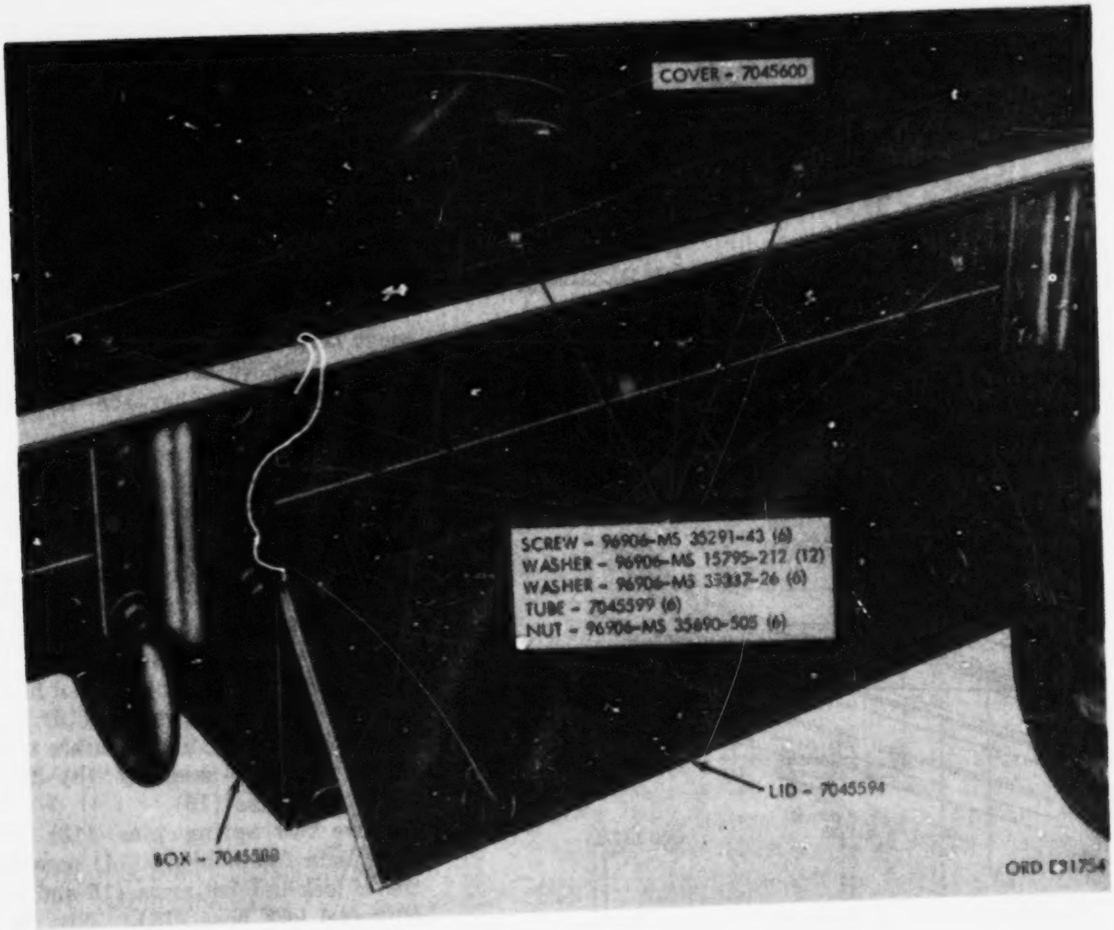

COVER - 7045600
SCREW - 96906-MS 35291-43 (6)
WASHER - 96906-MS 15795-212 (12)
WASHER - 96906-MS 35337-26 (6)
TUBE - 7045599 (6)
NUT - 96906-MS 35690-505 (6)
LID - 7045594
BOX - 7045588
ORD E31754

Figure 9-8. Location of rifle hole cover and stowage box.

a. Refer to figure 9-9 and remove eight hex nuts (1), eight lockwashers (2), six hexagon-head capscrews (3), two hexagon-head capscrews (4), and two flat washers (5) freeing two each, of right-hand and left-hand ammunition stowage brackets (6 and 7), and eight shims (8). To remove the four stowage straps (13) from brackets (6 and 7), remove 16 hexagon nuts (9), 16 lockwashers (10), and 16 flathead screws (11). Lift off the eight freed footman loops (12) and slide four ammunition stowage strap assemblies (13) from the loops.

b. Still referring to figure 9-9, free the rear retainer (17) by removing two hexagon nuts (14), two lockwashers (15), and two slotted panhead screws (16). Lift off the rear retainer (17) and shim (18).

c. Refer to figure 9-10 to remove stowage box, and proceed as follows:

(1) Remove six plain hexagon nuts (1), six split lockwashers (2), and six plain flat washers (3) freeing the stowage box (4) and six tubular sleeve spacers (5). Remove the six remaining plain flat washers (7) from the platform.

(2) Remove the stowage box lid assembly (9) from the stowage box by removing two headless straight pins (8).

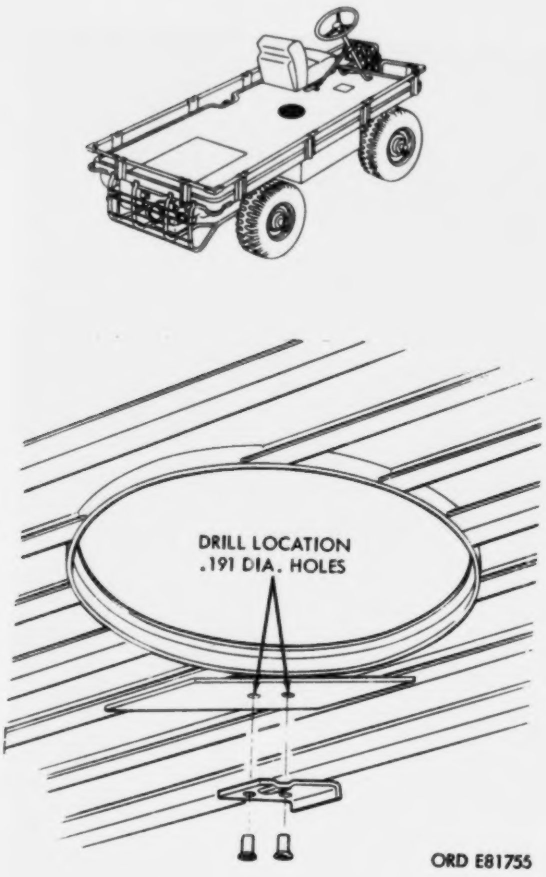


Figure 9-4. Cover latch plate location and hole drilling.

(3) To remove the two catch assemblies (10) from the lid assembly (9), remove catch retaining ring (11), plain flat washer (12) spring washer (13), and plain flat washer (14) from the catch handle (15), and remove handle from lid.

d. Removal of the rifle travel lock is accomplished as follows:

(1) Remove two handrail mounting bolts and plain hexagon nut, split lockwasher, five plain flat washers, and capscrew, which secures right-hand travel lock base assembly arm to left rear corner of platform.

(2) Remove two bolts with assembled washers from left-hand and center travel lock base assembly arms (fig 9-11). Remove travel lock assembly.

(3) Refer to figure 9-12 for disassembly of the travel lock assembly and remove one cotter pin (6), flat washer (7), and headed straight pin (9) securing travel lock clamp assembly (5) to travel lock assembly. Remove travel lock clamp assembly.

(4) Remove plain hexagon nut (4) and flat washer (3) from hook (1); remove hook from travel lock clamp assembly. Remove additional flat washer (3) and plain hexagon nut (2) from hook (1).

(5) Remove cotter pin (23), flat washer (22), and headed straight pin (20) securing hoop (21) to handle (19), and remove hoop.

(6) Loosen setscrew (24) and remove straight pin (25) securing handle (19) to travel lock support assembly (8), and remove handle.

(7) Remove cotter pin (10), slotted hexagon nut (11), plain washer (12), and threaded pin (18), and separate travel lock support assembly (8) from travel lock base (16).

(8) Remove two spring pins (13) and four plain flat washers (14) securing travel lock bracket arms (15 and 17) to travel lock base (16).

e. Refer to figure 9-11 to remove the travel lock stowage strap assembly and loop, and proceed as follows:

(1) Remove two hexagon nuts, lockwashers, and machine screws securing footman loop to engine guard.

(2) Remove footman loop and stowage strap assembly.

f. Refer to figure 9-13 for removal of the rifle tripod stowage brackets and proceed as follows:

(1) Remove four plain hexagon nuts (1), four lockwashers (2), eight flat washers (3), and four machine screws (4) securing the two rear rifle tripod stowage brackets (5) to the top right-

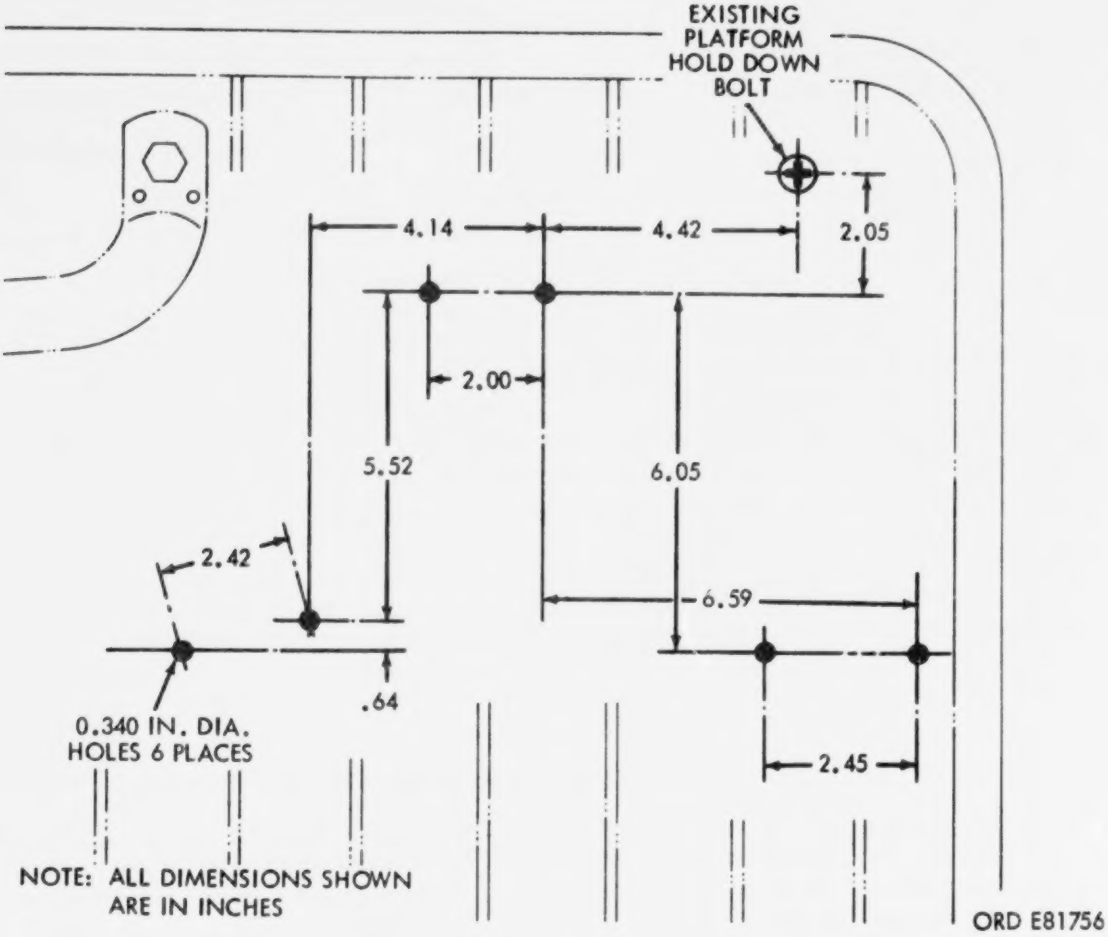

EXISTING PLATFORM HOLD DOWN BOLT
4.14
4.42
2.05
2.00
5.52
6.05
2.42
6.59
.64
2.45
0.340 IN. DIA. HOLES 6 PLACES
NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES
ORD E81756

Figure 9-5. Location of six 0.340-dia holes.

hand corner of the platform. Remove two brackets and shims (6).

(2) Remove two hexagon nuts (7), lockwashers (8), flat washers (9), and machine screws (10) securing the forward rifle tripod stowage bracket (11) to the platform, and remove bracket and shim (12).

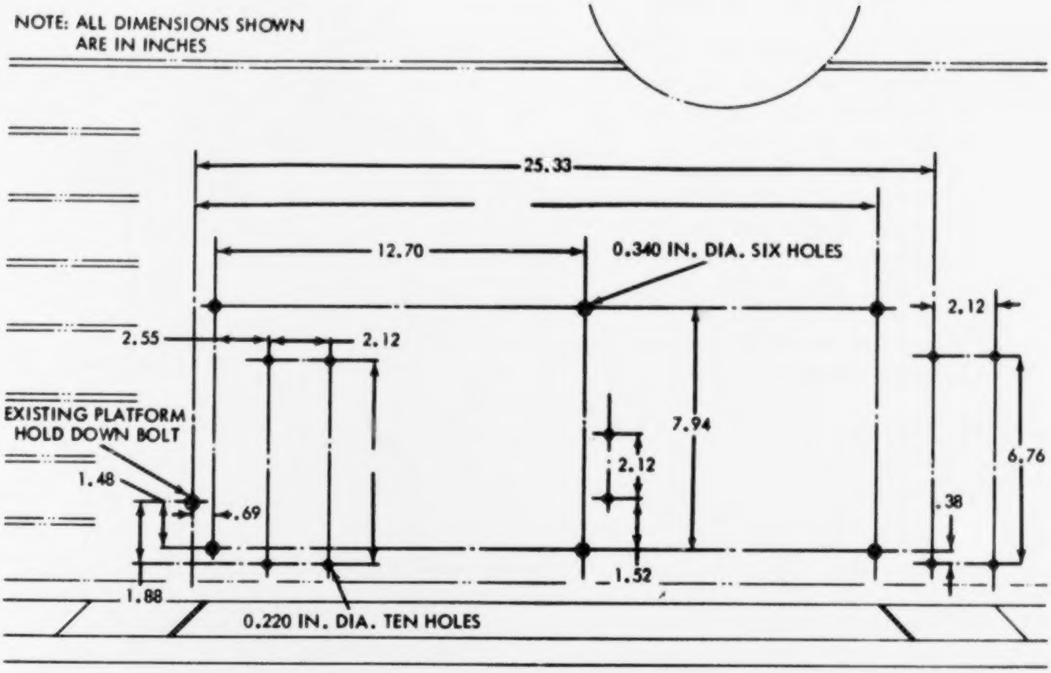
g. Refer to figure 9-13 for removal of the rifle tripod stowage straps and proceed as follows:

(1) Remove eight hexagon nuts (13), lockwashers (14), flat washers (15), and machine screws (16) securing the rifle tripod stowage strap assemblies to the top left-hand side of the platform.

(2) Remove four footman loops (19) and stowage strap assemblies (17 and 18).

h. Refer to figure 9-13 and remove two hexagon nuts (20), lockwashers (21), and machine screws (22) for removal of the front retainer (23) and shim (24).

i. Refer to figure 9-14 for removal of hangers, U-bolts, and riflemount support, and proceed as follows:


NOTE: ALL DIMENSIONS SHOWN
ARE IN INCHES
25.33
12.70
0.340 IN. DIA. SIX HOLES
2.12
2.55
2.12
EXISTING PLATFORM
HOLD DOWN BOLT
1.48
.69
7.94
2.12
6.76
.38
1.52
1.88
0.220 IN. DIA. TEN HOLES

ORD E81757

Figure 9–6. Location of six 0.340 and ten 0.220–dia holes.

(1) Remove four hexagon nuts (1) flat washers (2) lockwashers (3), and capscrews (4) securing two hangers (5). Remove hangers.

(2) Remove eight hexagon nuts (6) and lockwashers (7) from four U-bolts (8) securing rifle-mount support. Remove four U-bolts (8), four blocks (9), rifle-mount support (10), and cover (11).

j. For removal of the bag assembly (12) refer to figure 9–14 and remove straps.

9–5. Repair and Installation of the Armament Kit Components

Repair and installation of the armament kit components is accomplished as outlined in the following steps.

a. Repair and installation of the ammunition stowage brackets and ammunition stowage straps is accomplished as follows: (Refer to fig 9–9.)

(1) *Repair.* Check to see if ammunition stowage brackets or straps are damaged or worn in any way. Replace if necessary.

(2) *Installation.* Install the ammunition stowage brackets and straps as follows: (Refer to fig 9–9.)

(*a*) Position eight shims (8) under the ends of four ammunition stowage brackets (6 and 7) and secure with six hexagon-head capscrews (3) and two hexagon-head capscrews (4), eight lockwashers (2), two flat washers (5), and eight plain hexagon nuts (1).

(*b*) Attach four ammunition stowage straps (13) to brackets (6 and 7) with eight footman loops (12). Secure each footman loop with two flathead machine screws (11), two lockwashers (10), and two hexagon nuts (9).

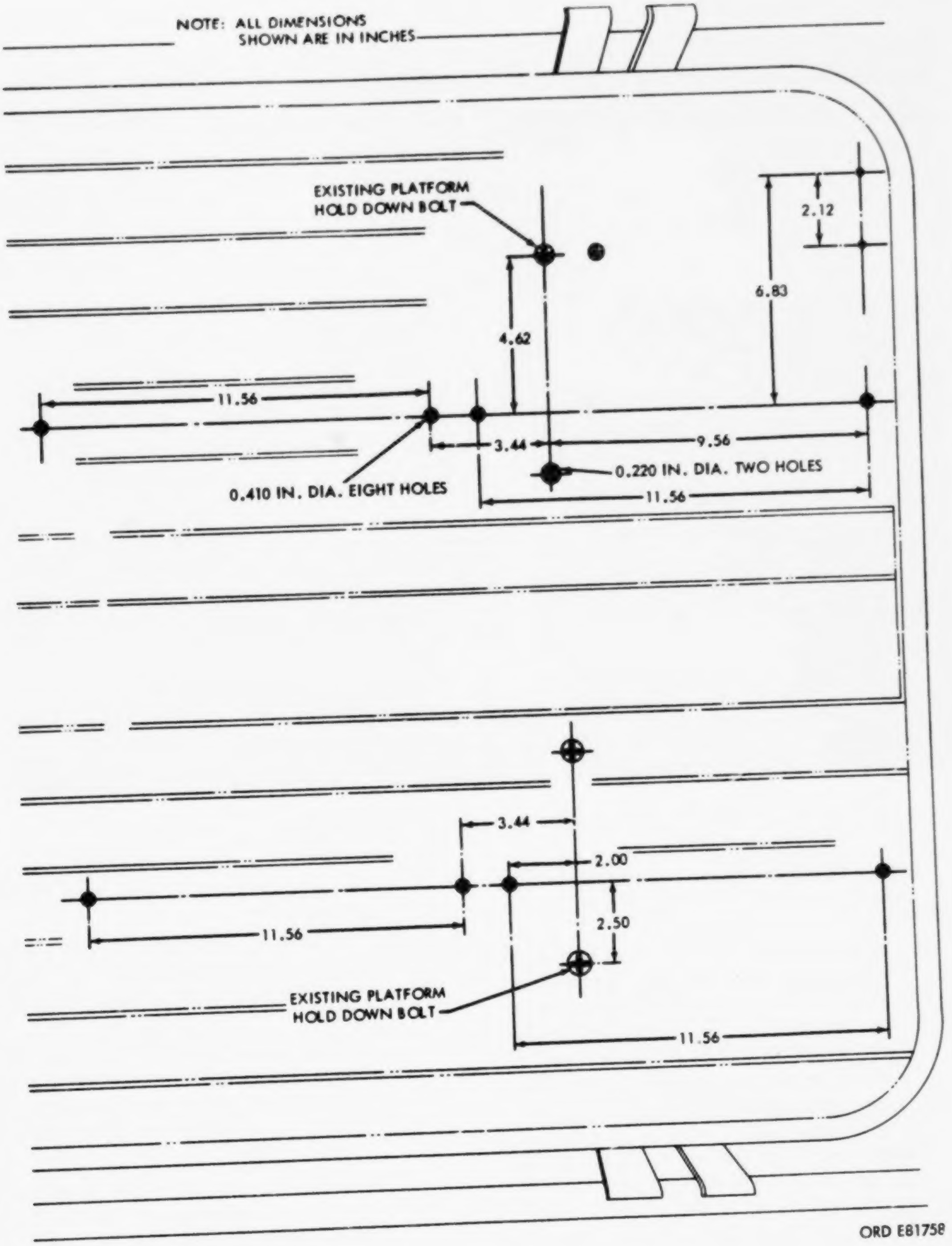

NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES
EXISTING PLATFORM HOLD DOWN BOLT
2.12
6.83
4.62
11.56
3.44
9.56
0.220 IN. DIA. TWO HOLES
0.410 IN. DIA. EIGHT HOLES
11.56
3.44
2.00
11.56
2.50
EXISTING PLATFORM HOLD DOWN BOLT
11.56
ORD E81758

Figure 9-7. Location of two 0.220-dia holes and eight 0.410-dia holes.

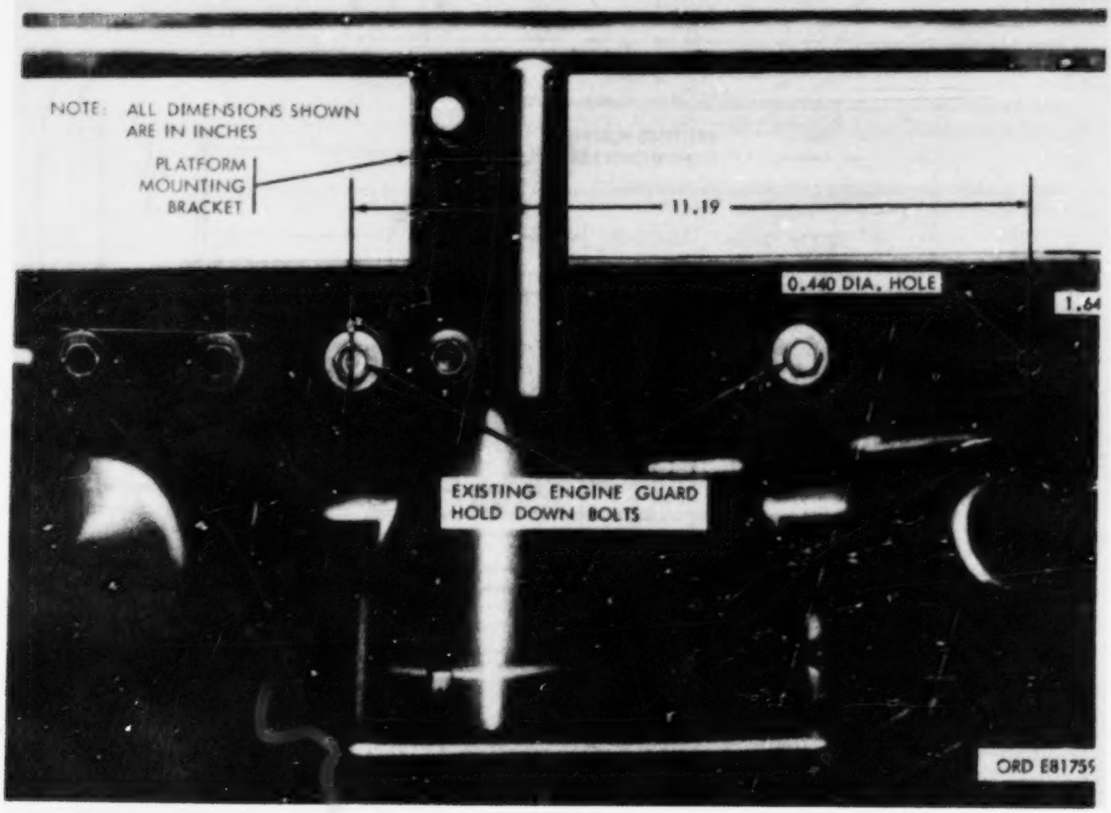

NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES
PLATFORM MOUNTING BRACKET
11.19
0.440 DIA. HOLE
1.64
EXISTING ENGINE GUARD HOLD DOWN BOLTS
ORD E81755

Figure 9-8. Platform mounting bracket flange removal area.

b. Repair and installation of the rear retainer is accomplished as follows: (Refer to fig 9-9.)

(1) *Repair.* Check retainer for damage or excessive wear. Replace if necessary.

(2) *Installation.* Install the rear retainer by positioning the shim (18) under the retainer (17) and securing with two panhead machine screws (16), two lockwashers (15), and two hexagon nuts (14).

c. Repair and installation of the stowage box, lid, and catches is accomplished as follows: (Refer to fig 9-10.)

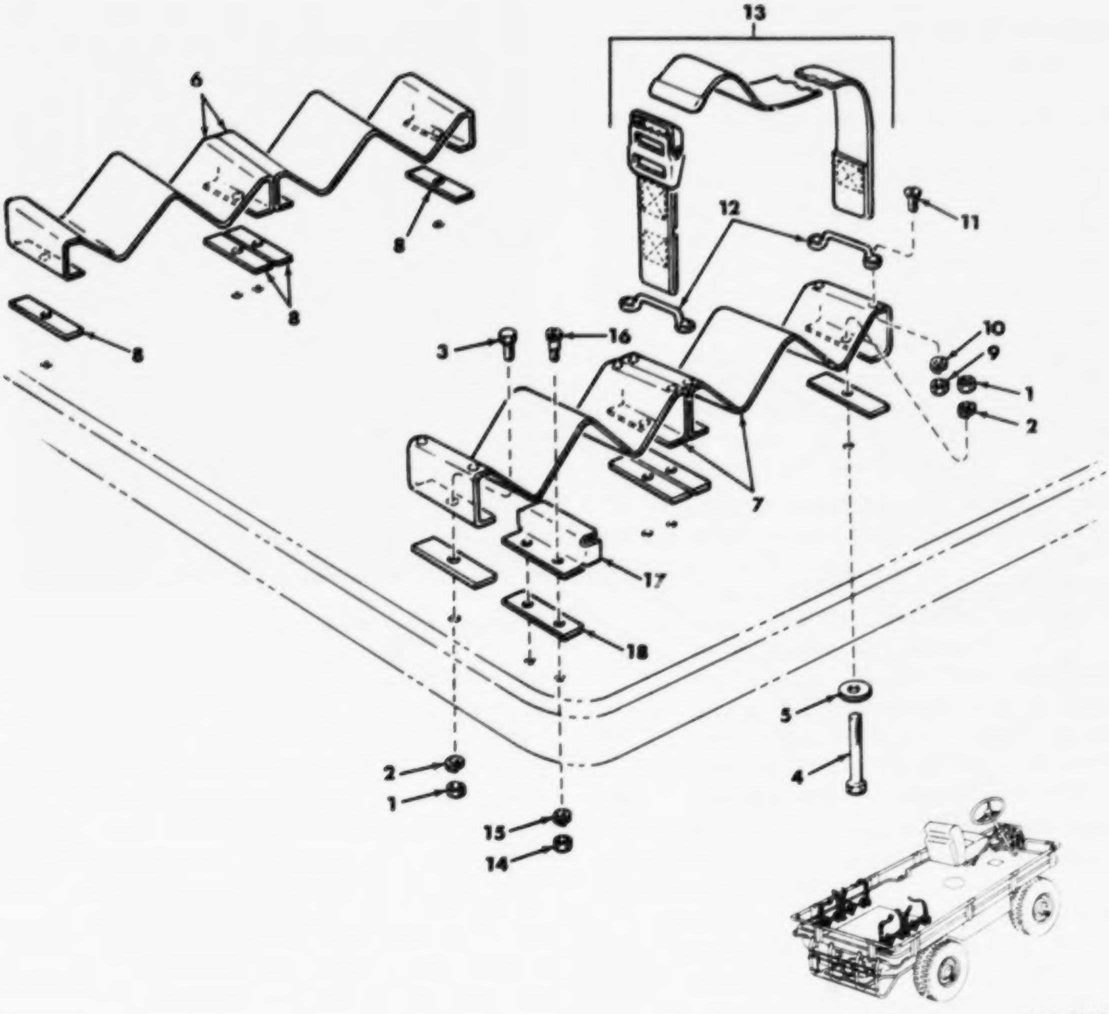
(1) *Repair.* Check stowage box assembly for excessive damage, and repair or replace as required. Check catches for bent or broken parts, and replace as necessary.

(2) *Installation.* Installation and assembly of the stowage box is accomplished as follows: (Refer to fig 9-10.)

(*a*) Place catch handle (15) in lid (9) and retain with one flat washer (14), one spring washer (13), one flat washer (12) and one retaining ring (11).

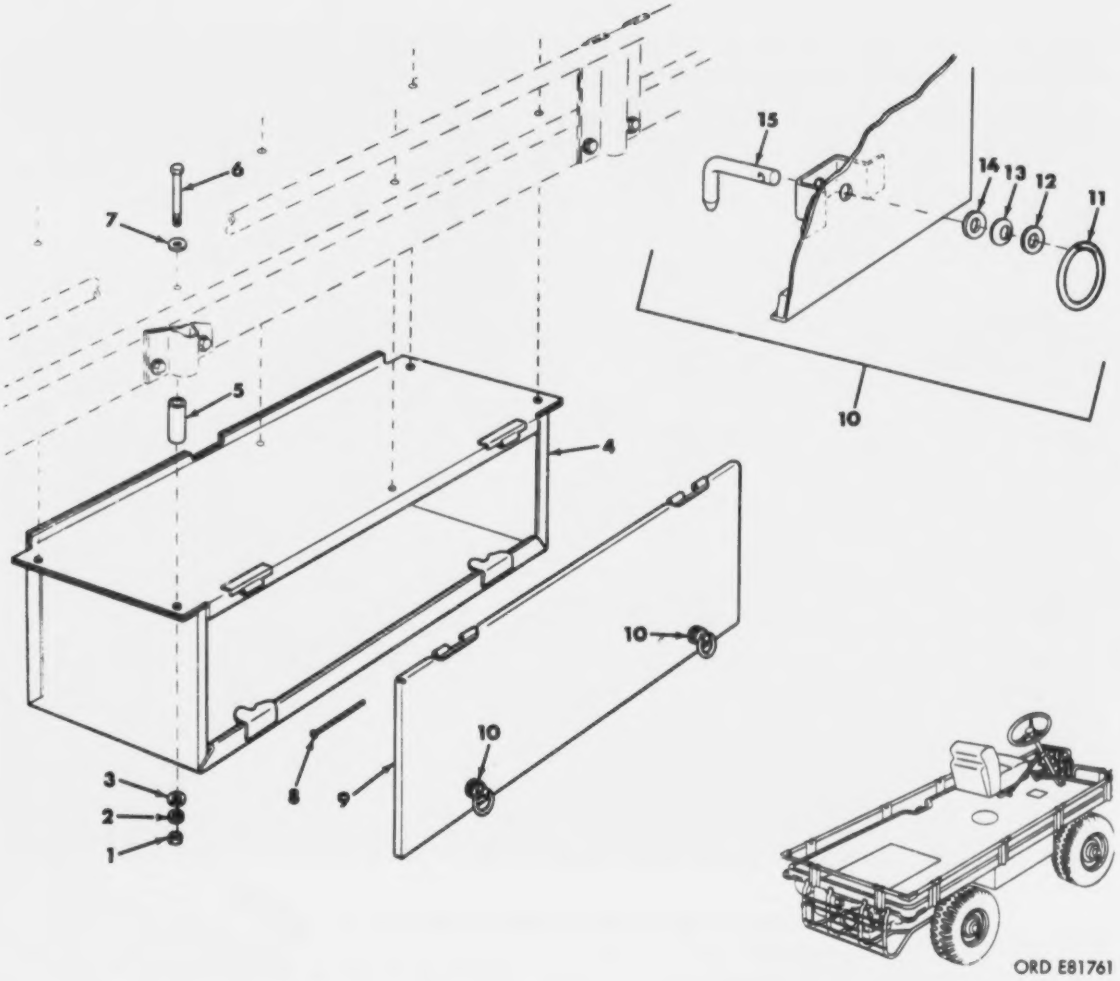
(*b*) Place lid assembly (9) on stowage box (4) and retain with two headless straight pins (8).

(*c*) Install stowage box (4) on the platform by placing six spacers



1—3/8-24 hex nut (8)—96906-35690-625
2—3/8-inch lockwasher (8)—96906-35337-27
3—3/8-24 x 5/8 hex-head capscrew (6)—96906-35292-58
4—3/8-24 x 2-3/4 hex-head capscrew (2)—96906-35292-69
5—Flat washer (2)—7058898
6—Stowage bracket (2)—7045577
7—Stowage bracket (2)—7045578
8—Shim (8)—7045579
9—10-32 hex nut (16)—120614
10—.190-inch lockwasher (16)—96906-35337-24
11—10-32 x 5/8 flathead machine screw (16)—96906-35240-73
12—Loop (8)—7058899
13—Strap, male end (4)—7045580; Strap, female end (4)—7045581
14—10-32 hex nut (2)—120614
15—.190-inch lockwasher (2)—96906-35337-24
16—10-32 x 1/2 panhead machine screw (2)—96906-35224-63
17—Rear retainer—7045583
18—Shim—7045584

Figure 9-9. Removal of ammunition stowage brackets, ammunition stowage strap assemblies, and rear retainer—exploded view.



1—5/16-18 hex nuts (6)—96906-35690-505
2—5/16-inch lockwashers (6)—96906-35337-26
3—5/16-inch flat washers (6)—96906-15795-212
4—Stowage box—7045588
5—Spacers (6)—7045599
6—5/16-18 x 2-3/4 hex-head capscrews (6)—96906-35291-43
7—5/16-inch flat washers (12)—96906-15795-212
8—Headless straight pin (2)—7375166
9—Lid—7045594
10—Catch assembly (2)—7045593
11—Retaining ring (2)—8730519
12—5/16-inch flat washer (2)—96906-15795-212
13—5/16-inch spring washer (2)—8329984
14—5/16-inch flat washer (2)—96906-15795-212
15—Catch (2)—7375169

Figure 9–10. Removal of stowage box, stowage box lid assembly, and lid assembly catches—exploded view.

(5) and six flat washers (7) on top of box, and position box under platform. Place six hexagon-head capscrews (6) through platform and top of stowage box and secure with six flat washers (3), six lockwashers (2), and six hexagon nuts (1).

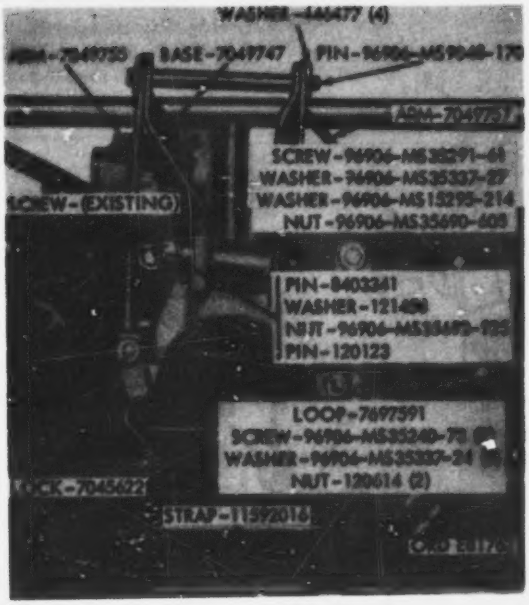

WASHER-444477 (4)
ARM-7049735
BASE-7049747
PIN-96906-MS9048-170
ARM-7049757
SCREW-96906-MS35291-61
WASHER-96906-MS35337-27
WASHER-96906-MS15295-214
NUT-96906-MS35690-605
SCREW-(EXISTING)
PIN-8403341
WASHER-121498
NUT-96906-MS35692-925
PIN-120123
LOOP-7697591
SCREW-96906-MS35240-73
WASHER-96906-MS35337-24
NUT-120614 (2)
CK-7045692
STRAP-11592016
ORD E8176

Figure 9-11. Removal of travel lock assembly.

d. Repair, assembly, and installation of the rifle travel lock assembly is accomplished as follows: (Refer to figs 9-11 and 9-12.)

(1) *Repair.* Check rifle travel lock assembly for bent, broken or worn parts, and replace as necessary.

(2) *Assembly.* Assemble the rifle travel lock as follows: (Refer to fig 9-12.)

(*a*) Attach travel lock arms (15 and 17) to travel lock base assembly (16), securing with four plain washers (14) and two new spring pins (13).

(*b*) Secure travel lock support assembly (8) to travel lock base assembly (16) using threaded pin (18), flat washer (12), slotted hexagon nut (11), and new cotter pin (10).

(*c*) Secure handle (19) to travel lock support assembly (8) using new straight pin (25), and tighten setscrew (24).

(*d*) Attach hoop clevis (21) to travel lock support assembly securing with headed straight pin (20), flat washer (22), and new cotter pin (23). Attach hook (1) to travel lock clamp assembly (5), securing with two lockwashers (3) and two hexagon nuts (2 and 4).

(*e*) Attach travel lock clamp assembly (5) to travel lock support assembly (8), securing with headed straight pin (9), flat washer (7), and new cotter pin (6).

(3) *Installation.* Attach (fig 9-11) rifle travel lock assembly to left rear corner of platform, using two existing holes and bolts with assembled washers to secure the left-hand and center travel lock base assembly arms; and one 3/8-16 x 1-1/8 capscrew, one to five 3/8 flat washers used as shims, one 3/8-inch lockwasher and 3/8-16 hexagon nut to secure right-hand travel lock assembly arm.

e. Repair and installation of the travel lock stowage strap is accomplished as follows: (Refer to fig 9-11.)

(1) *Repair.* Check stowage strap and footman loop for excessive damage or wear. Replace if necessary.

(2) *Installation.* Secure travel lock stowage strap and footman loop to engine guard with two 10-32 x 5/8 machine screws, two #10 (0.190) lockwashers, and two 10-32 hexagon nuts.

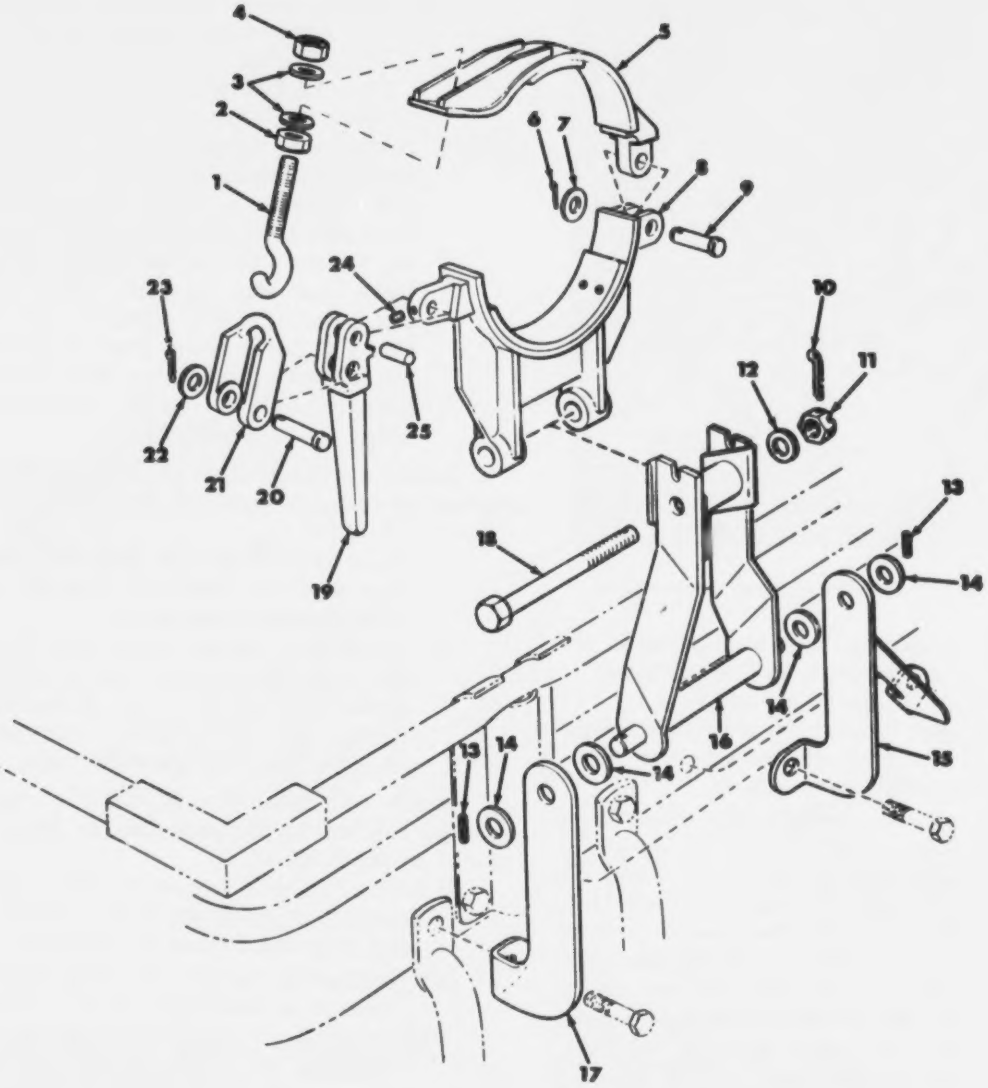
f. Repair and installation of the rifle tripod stowage brackets is accomplished as follows: (Refer to fig 9-13.)

(1) *Repair.* Check to see if rifle tripod stowage brackets are bent or worn in any way and replace if necessary.

(2) *Installation.* Install the rifle tripod brackets as follows:

(*a*) Position one shim (12) and center bracket (11) on platform and secure with two flathead machine screws (10), two flat washers (9), two lockwashers (8), and two hexagon nuts (7).

(*b*) Position two shims (6) and two brackets (5) to the top right-hand corner of the platform and secure each bracket with two machine screws (4), four flat washers (3), two lockwashers (2), and two hexagon nuts (1).



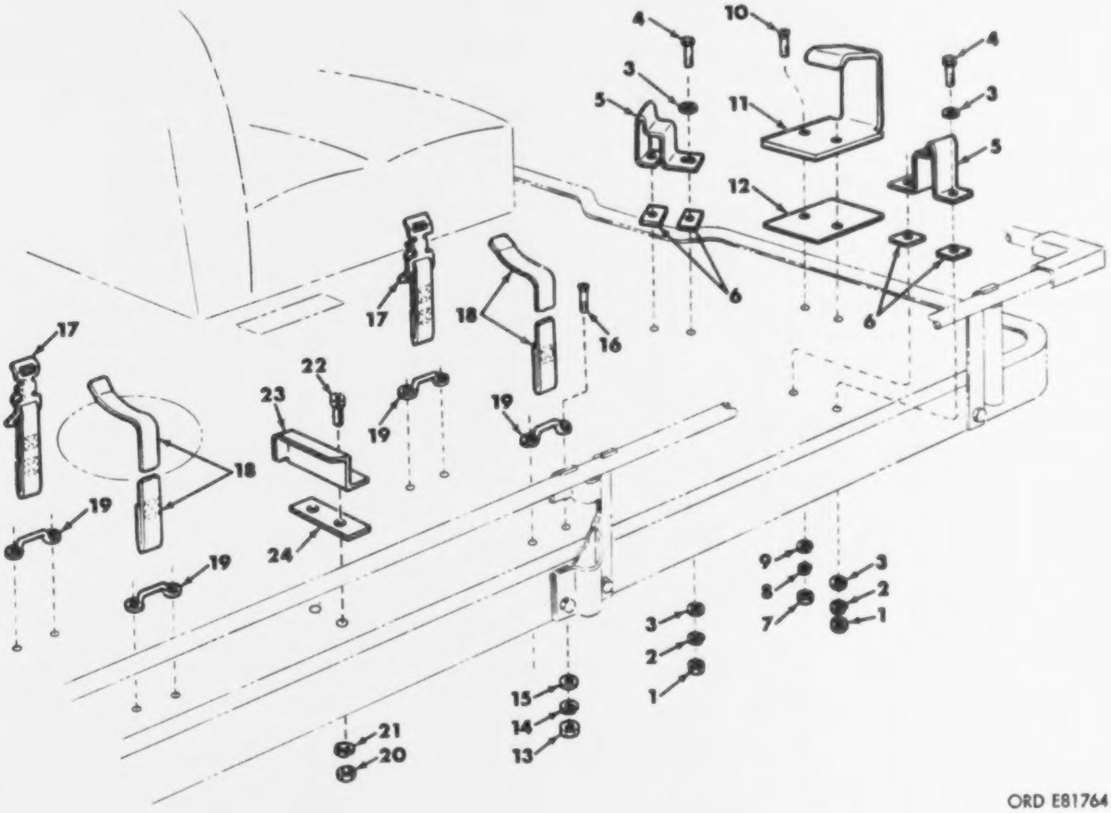
ORD E81763

1—Hook—8403347
2—3/8-24 hex jamnut—96906-35691-625
3—3/8-inch internal-tooth lockwasher (2)—180358
4—3/8-inch plain hex nut—96906-35690-628
5—Clamp assembly—8403349
6—3/32 x 3/4 cotter pin—121222
7—Flat washer—96906-15795-214
8—Support assembly—8403348
9—Headed straight pin—8403340
10—1/8 x 1/4 cotter pin—120128
11—9/16-18 slotted hex nut—96906-35692-925
12—5/8-inch flat washer—121458
13—3/16 dia x 1 spring pin (2)—96906-9046-170
14—3/8-inch flat washer (4)—446477
15—Arm—7049757
16—Base assembly—7049747
17—Arm—7049755
18—Threaded pin—8403341

Figure 9–12. Disassembly of travel lock assembly—exploded view.

19—Handle—8403345
20—Headed straight pin—3403342
21—Hoop clevis—8403346
22—3/8-inch flat washer—96906-15795-214
23—3/32 x 3/4 cotter pin—121222
24—10-32 x 1/4 setscrew—173675
25—3/8 x 1 straight pin—590031

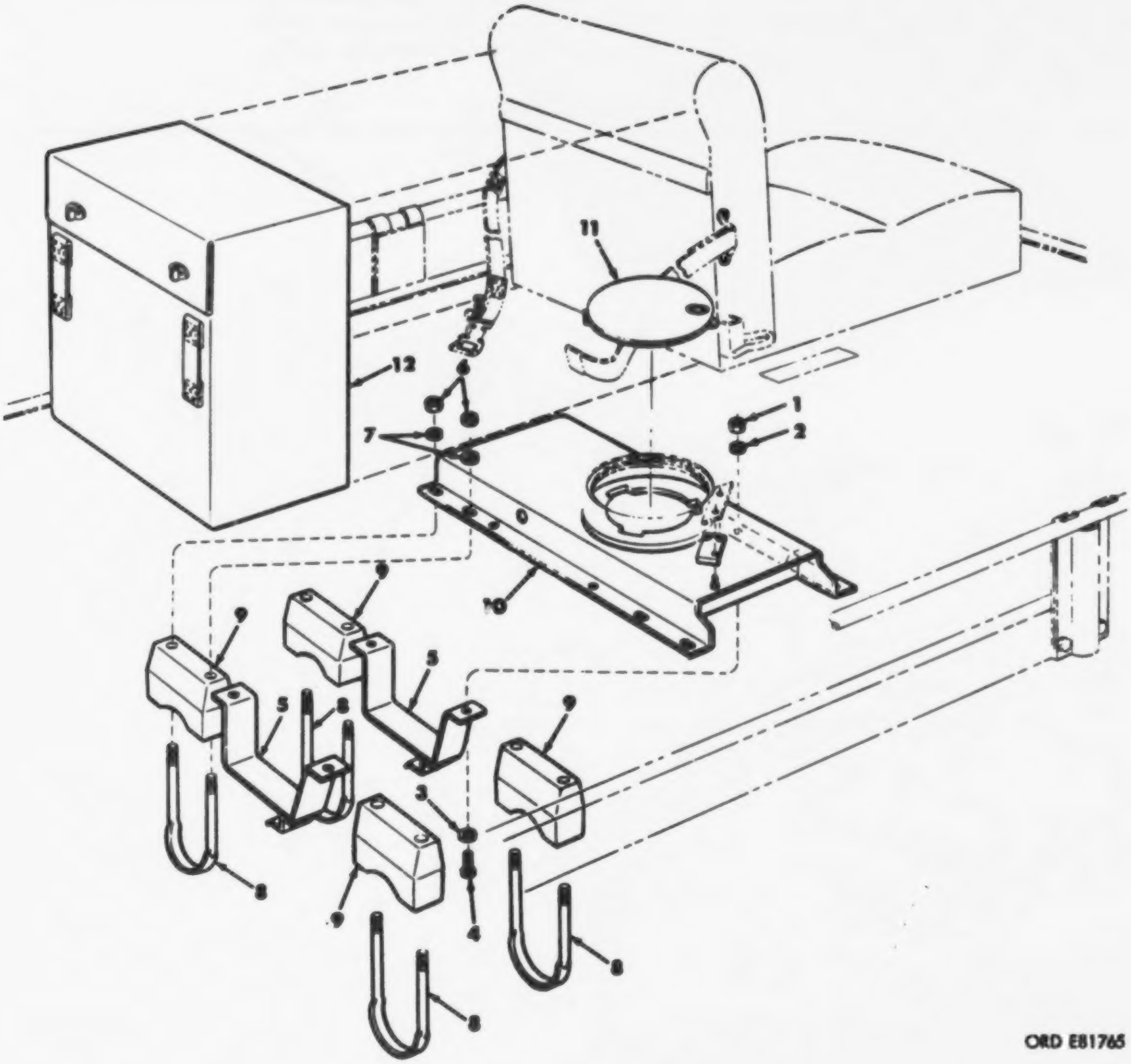
Figure 9-12—Continued.



ORD E81764

1—5/16-18 hex nut (4)—96906-35690-505
2—5/16-inch lockwasher (4)—96906-35337-26
3—5/16-inch flat washer (8)—96906-15795-212
4—5/16-18 x 7/8 machine screw (4)—96906-35201-33
5—Bracket—7045617—7045618
6—Shim (4)—8336091
7—5/16-18 hex nut (2)—96906-35690-505
8—5/16-inch lockwasher (2)—96906-15795-212
9—5/16-inch flat washer (2)—96906-35337-26
10—5/16-18 flathead machine capscrew (2)—96906-35192-86
11—Bracket—7045619
12—Shim—7045620
13—10-32 hex nut (8)—120614
14—3/16-inch lockwasher (8)—7058902
15—.190-inch flat washer (8)—96906-35337-24
16—10-32 x 5/8 flathead machine screw (8)—96906-35240-73
17—Strap—7045586
18—Strap—7045587
19—Loop (4)—7697591
20—10-32 hex nut (2)—120614
21—.190-inch lockwasher (2)—96906-35337-24
22—10-32 x 1/2 panhead machine screw (2)—96906-35224-63
23—Retainer—7045582
24—Shim—7045584

Figure 9-13. Removal of tripod stowage brackets and strap assemblies.



1—5/16-18 hex nut (4)—96906-35690-505
2—5/16-inch flat washer (4)—96906-15795-212
3—5/16-inch lockwasher (4)—96906-35337-26
4—5/16-18 x 3/4 capscrew (4)—96906-35291-32
5—Hanger (2)—7045606
6—7/16-20 hex nut (8)—96906-35690-725
7—7/16-inch lockwasher (8)—96906-35337-28
8—U-bolt (4)—7045616
9—Block (4)—7045615
10—Rifle-mount support—7045609
11—Cover assembly—7045600
12—Bag assembly—7045265

Figure 9-14. Removal of hangers, U-bolts, and rifle-mount support.

g. Repair and installation of the rifle tripod stowage straps is accomplished as follows: (Refer to fig 9-13.)

(1) *Repair*. Check stowage straps and footman loop for excessive damage or wear. Replace if necessary.

(2) *Installation.* Place tripod stowage straps (17 and 18) and footman loop (19) in position and secure each footman loop with two flathead machine screws (16), two flat washers (15), two lockwashers (14), and two hexagon nuts (13).

h. Repair and installation of the front retainer is accomplished as follows: (Refer to fig 9-13.)

(1) *Repair.* Check retainer for excessive wear or damage. Replace if necessary.

(2) *Installation.* Place shim (24) under retainer (23) and position on platform. Secure with two panhead machine screws (22), two lockwashers (21), and two hexagon nuts (20).

i. Repair and installation of the hangers, U-bolts, and rifle-mount support is accomplished as follows: (Refer to fig 9-14.)

(1) *Repair.* Check hangers, U-bolts, and rifle-mount support for excessive wear or damage. Replace if necessary.

(2) *Installation.* Installation of the blocks (9), U-bolts (8), and rifle-mount support (10) is accomplished as follows:

(*a*) Place rifle-mount support (10) and cover assembly (11) on platform, install U-bolt (8) through block (9), platform, and rifle-mount support (10), and secure each U-bolt with two lockwashers (7) and two hexagon nuts (6).

(*b*) Position hangers (5) on vehicle between U-bolts and secure each hanger with two capscrews (4), two lockwashers (3), two flat washers (2) and two hexagon nuts (1).

(*c*) Repair and installation of the stowage bag is accomplished as follows: (Refer to fig 9-14.)

1. *Repair.* Check to see if stowage bag is torn or worn in any way. Replace if necessary.

2. *Installation.* Install stowage bag (12) to rear of operator's seat, using the operator's seat stowage strap.

Section III. LITTER KIT

9-6. General

For a description of the litter kit and procedures for removal, repair, and installation, refer to TM 9-2320-246-20.

9-7. Authorization for Application

The authorization for applying the litter kit to the vehicle is the applicable TOE, TA or TD.

9-8. Repair Parts

The litter kit and repair parts supplied in support of the litter kit are listed in TM 9-2320-246-20P which is the authorization for requisitioning repair parts.

APPENDIX A

REFERENCES

1. General Publications

Dictionary of United States Army Terms	AR 320-5
Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings	DA Pam 108-1
Military Publications Index (as applicable)	DA Pam 310-series
Military Symbols	FM 21-30
The Army Equipment Record System and Procedures	TM 38-750
Military Terms, Abbreviations, and Symbols:	AR 320-50
Authorized Abbreviations and Brevity Codes	
	AR 385-40
	AR 700-1300-8
Military Training	FM 21-5
Techniques of Military Instructions	FM 21-6

2. Military Publication Indexes

DA Pamphlets 310-1, -2, -3, -4, -5, -7, -29, and DA Pamphlet 108-1 should be consulted frequently for latest changes or revisions of reference material listed in this appendix, and for new publications pertinent to major item materiel on technical manual being prepared.

3. Supply Manuals Maintenance and Repairs

Lubricating Fittings, Oil Filters, and Oil Filter Elements	ORD 5 SNL H-16
Tires and Tubes, Pneumatic	SM 9-1-2610
Tire Rebuilding and Tire and Tube Repair Materials	SM 9-2640
Tool Kit, Automotive Mechanics (41-T-3534-30)	SM 10-4-5180-A13
Tool Kit, Automotive Maintenance: Organizational Maintenance, No. 1, Common (4910-754-0654)	SC 4910-95-CL-A74
Tool Kit, Automotive Maintenance: Organizational Maintenance, No. 1, Supplemental (4910-754-0653)	SC 4910-95-CL-A73
Tool Kit, Organizational Maintenance, No. 2, Common (4910-754-0650)	SC 4910-95-CL-A72
Tool Set, Organizational Maintenance, No. 7, Supplemental (4910-754-0652)	SC 4910-95-CL-A51

4. Forms

DA Form 9-1, Materiel Inspection Tag

DA Form 9-3, Processing Board for Shipment and Storage of Vehicles and Boxed Engines (Tag)

DA Form 9-4, Vehicular Storage and Servicing Record (Card)

DA Form 348, Driver Qualification Record

DA Form 461-5, Limited Technical Inspection
DA Form 2028, Recommended Changes to DA Technical Manuals, Parts Lists or Supply Manuals 7, 8, or 9
DA Form 2402, Exchange Tag
DA Form 2404, Equipment Inspection and Maintenance Worksheet
DA Form 2405, Maintenance Request Register
DA Form 2407, Maintenance Report
DA Form 2407-1, Maintenance Request—Continuation Sheet
DA Form 2408-2, Lubrication Records
DA Form 2408-3, Equipment Maintenance Record (Organizational)
DA Form 2408-5, Equipment Modification Record
DA Form 2409, Equipment Maintenance Log (Consolidated)
DA Form 2410, Component Removal and Repair/Overhaul
DD Form 6, Report of Damaged or Improper Shipment
DD Form 314, Preventive-Maintenance Schedule and Record
DD Form 1397, Processing and Deprocessing Record for Shipment, Storage, and Issue of Vehicles

5. Other Publications

a. Camouflage

Camouflage, Basic Principles	FM 5-20

b. General

Army Equipment Record Procedures	TM 38-750
Cooling Systems: Vehicle and Powered Ground Equipment	TM 9-2858
Driver Selection and Training	TM 21-300
Military Vehicles (Ordnance Corps Responsibility)	TM 9-2800-1
Principles of Automotive Vehicles	TM 9-8000
Spark Plugs	TM 9-8638
Supplies and Equipment (Motor Vehicles)	TM 9-208-1 TM 9-247

c. Maintenance and Repair

Engine, Gasoline, 14 HP (Military Standard Model A042). Used on Truck, Platform Utility, 1/2 Ton, 4 x 4 (Maintenance)	TM 5-2805-213-14
Engine Gasoline, 14 HP (Military Standard Model A042). Used on Truck, Platform Utility, 1/2 Ton, 4 x 4 (Repair Parts)	TM 5-2805-213-24P
Tires, Repair and Rebuild of Pneumatic Tires and Tubes	SM 9-1-2600
Truck, Platform Utility: 1/2 Ton, 4 x 4, M274A2, M274A3, M274A4 and M274A5 (Maintenance)	TM 9-2320-246-20
Truck, Platform Utility: 1/2 Ton, 4 x 4, M274A2, M274A3, M274A4 and M274A5 (Repair Parts)	TM 9-2320-246-20P
Truck, Platform Utility: 1/2 Ton, 4 x 4, M274A2, M274A3, M274A4 and M274A5 (Repair Parts)	TM 9-2320-246-34P

d. Vehicular Operation and Maintenance

Care and Maintenance of Pneumatic Tires	TM 9-1870-1
Lubrication Order (Pertinent to Vehicle)	LO 9-2320-246-12 TM 9-213 AR 725-50 LO 5-2805-213-14

Marking of Artic-Lubricated Materiel and Equipment	SR 746-30-10
Operator's Manual (Pertinent to Vehicle)	TM 9-2320-246-10
Organizational Repair Parts and Special Tools (Pertinent to Vehicle)	TM 9-2320-246-20P
Packaging and Shipping Materiel: Preservation, Packaging, and Packing of Military Supplies and Equipment	TM 38-230
Painting Instructions for Field Use	TM 9-213
Processing of Unboxed Self-Propelled and Towed Class II Ordnance General Supplies and Related Materiel for Shipment and Storage	SB 9-4
Protection of Ordnance General Supplies in Open Storage	TB ORD 379
Report of Damaged or Improper Shipment	AR 700-58
Standards for Oversea Shipment and Domestic Issue of Ordnance Materiel Other than Ammunition and Army Aircraft	TB ORD 335

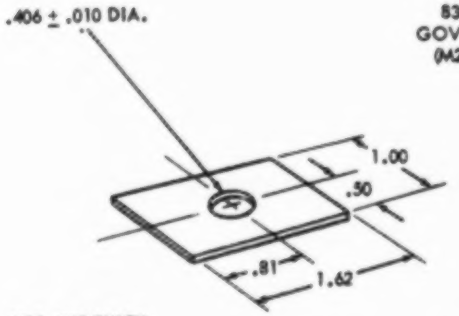
APPENDIX B

FABRICATED PARTS

Section I. INTRODUCTION

1. Included in Section II of this appendix are the drawings of fabricated parts authorized for manufacture by Direct Support, General Support, and Depot Maintenance personnel. For a listing of these parts see applicable group in TM 9-2320-246-34P.

Section II. LIST OF FABRICATION DRAWINGS



8336091
GOVT GRP 03
(M274A3)

USE .032 THICK
ALUMINUM ALLOY
TYPE 5052
TEMPER H22 OR H32
SPEC. QQ-A-250/8b

PRIME TT-P-666

PAINT OD per
TT-E-529

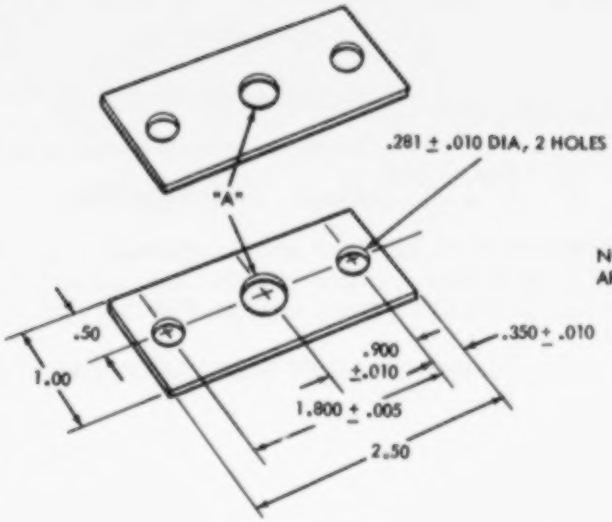
NOTE: ALL DIMENSIONS
ARE IN INCHES

ORD E81766

Figure B-1. Shim—dimensional drawing.

ALUMINUM ALLOY 6061
TEMPER T6, SPEC QQ-A-250/11
CONDITION PER SPEC MIL-C-5541
TYPE 1, GRADE A, CLASS 2
PRIME PER SPEC TT-P-666
ENAMEL OD PER SPEC TT-E-529

8336107
8336107-1
GOVT GRP 03
(M274A3)


"A"
.281 ± .010 DIA, 2 HOLES
.50
1.00
.900
±.010
.350 ± .010
1.800 ± .005
2.50

NOTE: ALL DIMENSIONS ARE IN INCHES

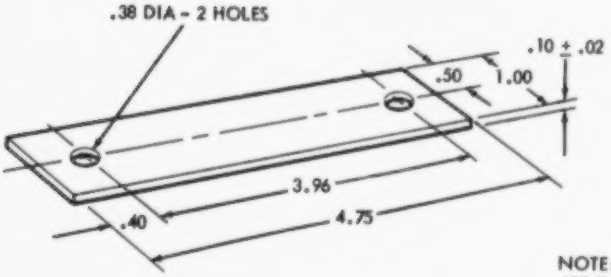
PART NO.	A DIA. ± .010
8336107	.390
8336107-1	.453

ORD E81767

Figure B-2. Plates—dimensional drawing.

GASKET MATERIALS
IDENT P1301-A
MIL-G-12803

7966593
GOVT GRP 04


.38 DIA - 2 HOLES
.10 ± .02
.50
1.00
3.96
.40
4.75

NOTE: ALL DIMENSIONS ARE IN INCHES

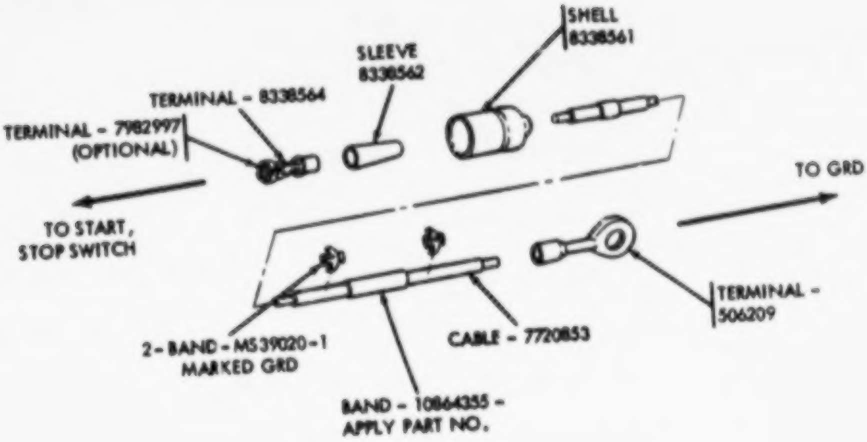
PART MUST NOT SHOW ANY TENDENCY TO DELAMINATE WHEN SUBJECT TO 24 HRS OVEN AGING AT 300°F.

ORD E81768

Figure B-3. Insulator—dimensional drawing.

7760068
GOVT GRP 06

CABLE TO BE FABRICATED IN ACCORDANCE
WITH DWG 8722729 ITEM 2


SHELL
8338561
SLEEVE
8338562
TERMINAL - 8338564
TERMINAL - 7982997
(OPTIONAL)
TO GRD
TO START,
STOP SWITCH
TERMINAL -
506209
2 - BAND - MS39020-1
MARKED GRD
CABLE - 7720853
BAND - 10864355 -
APPLY PART NO.

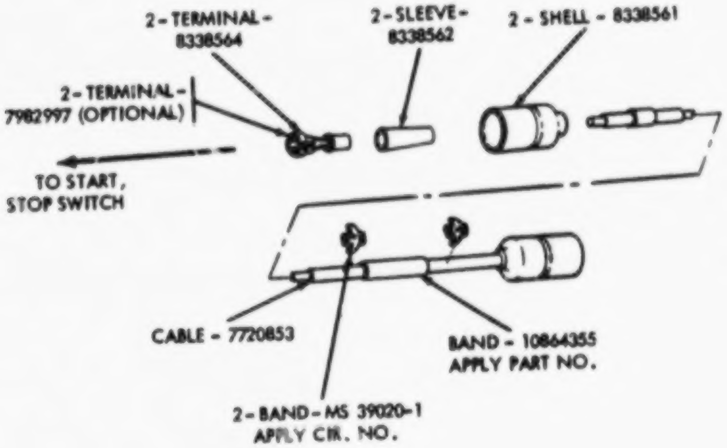
NOTE: ASSEMBLED LENGTH
OF CABLE 12.75 INCHES

ORD E81769

Figure B-4. Lead, electrical—fabrication drawing.

10945079
GOVT GRP 06

CABLE TO BE FABRICATED IN
ACCORDANCE WITH DWG
8722729 ITEM 2


2 - TERMINAL -
8338564
2 - SLEEVE -
8338562
2 - SHELL - 8338561
2 - TERMINAL -
7982997 (OPTIONAL)
TO START,
STOP SWITCH
CABLE - 7720853
BAND - 10864355
APPLY PART NO.
2 - BAND - MS 39020-1
APPLY CIR. NO.

NOTE: ASSEMBLED LENGTH
OF CABLE 108 INCHES

ORD E81770

Figure B-5. Lead, electrical—fabrication drawing.

NOTE: ALL DIMENSIONS
ARE IN INCHES

7966941
GOVT GRP 12

STEEL, SHEET OR STRIP
HR P & O OR CR COML
QUALITY OR TEMPER 3-5
SPEC QQ-S-698
.118 THICK

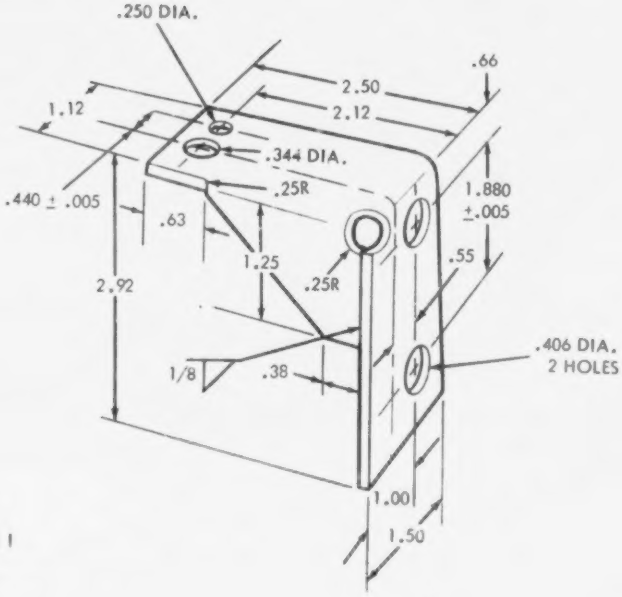
WELD IN ACCORDANCE
WITH SPEC MIL-W-13779

ALL DIMENSIONS RELATIVE
TO WELDING ARE MINIMUM

TREAT PER SPEC TT-C-490 TYPE I
OR III

PRIME PER SPEC TT-P-636 OR
TT-E-4(

ENAMEL OD PER SPEC TT-E-529



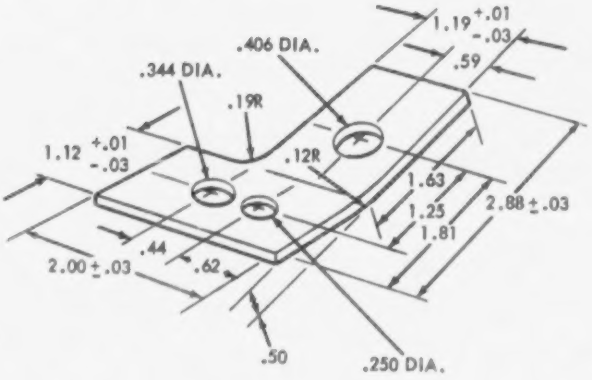
.250 DIA.
2.50
.66
2.12
1.12
.344 DIA.
.440 ± .005
.25R
1.880
±.005
.63
1.25
.25R
.55
2.92
.406 DIA.
2 HOLES
1/8
.38
1.00
1.50

ORD E81771

Figure B-6. Bracket—dimensional drawing.

STEEL CARBON
HRCOPO. CRCO
OR CR TEMPER OPT.
SPEC QQ-S-698
1196 (NO. 11 MSGA) THK

11591977
GOVT GRP 12



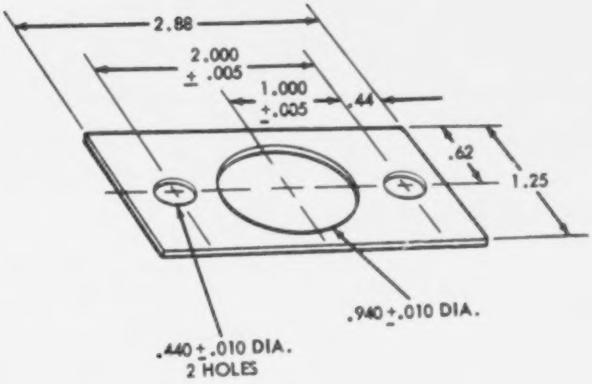
1.19 +.01 -.03
.59
.406 DIA.
.344 DIA.
.19R
1.12 +.01 -.03
.12R
1.63
1.25
1.81
2.88 ± .03
.44
2.00 ± .03
.62
.50
.250 DIA.

TREAT PER TYPE I OR III
SPEC TT-C-490
PRIME PER SPEC TT-P-636 OR
PRIME PER SPEC TT-P-664

ORD E81772

Figure B-7. Bracket—dimensional drawing.

7760066
GOVT GRP 14


2.88
2.000
± .005
1.000
±.005
.44
.62
1.25
.940 ±.010 DIA.
.440 ±.010 DIA.
2 HOLES

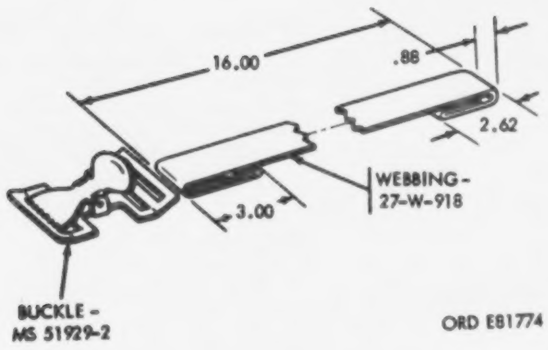
MATERIAL:
ALUMINUM ALLOY 5052
TEMPER H22 OR H32
SPEC QQ-A-318
.040 THICK

FINISH:
TREAT SPEC MIL-C-5541
PRIME SPEC TT-P-666
ENAMEL OD SPEC TT-E-529

ORD E81773

Figure B-8. Plate—dimensional drawing.

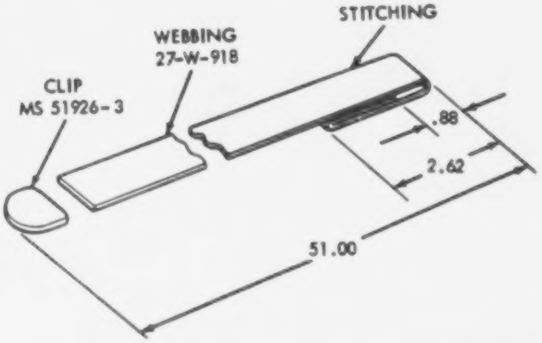
8336414
GOVT GRP 18


16.00
.88
2.62
3.00
WEBBING -
27-W-918
BUCKLE -
MS 51929-2

ORD E81774

Figure B-9. Strap assembly—dimensional drawing.

8336415
GOVT GRP 18


STITCHING
WEBBING
27-W-918
CLIP
MS 51926-3
.88
2.62
51.00

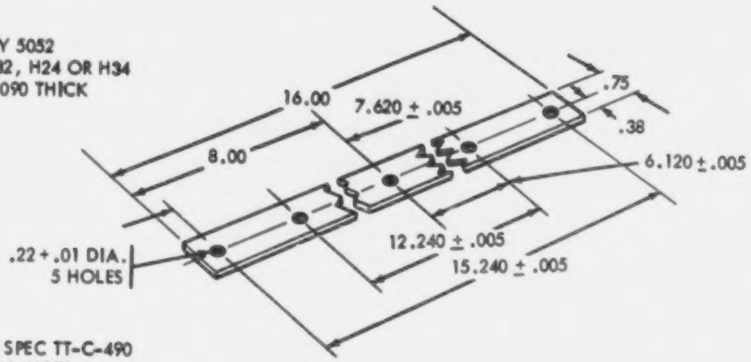
ORD E81775

Figure B-10. Strap assembly—dimensional drawing.

DIMENSIONS AND TOLERANCES
PER MIL-STD-8

MATERIAL:
ALUMINUM ALLOY 5052
TEMPER H22 OR H32, H24 OR H34
SPEC QQ A 318, .090 THICK

10945082
GOVT GRP 1E


16.00
7.620 ± .005
.75
.38
8.00
6.120 ± .005
.22 + .01 DIA.
5 HOLES
12.240 ± .005
15.240 ± .005

FINISH:
CLEAN METHOD II SPEC TT-C-490
PRETREAT PER MIL-M-10578
CHEMICAL FILM PER
MIL-C-5541
ENAMEL OD SPEC
TT-E-529

ORD E81776

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